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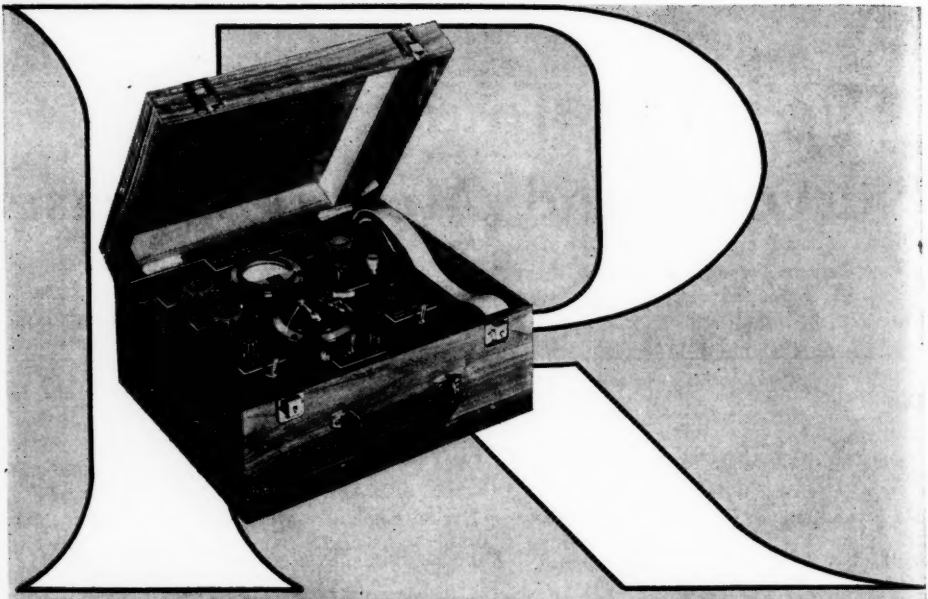

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THE PSYCHOSOMATIC CONCEPT OF PEPTIC ULCER[1]

HAROLD KAPLAN, M.D.[2]

The exact cause of peptic ulcer is not known. The fact that it has a five to ten per cent incidence (52) in the general population makes this pathological entity a major medical problem. Various theories have been advanced to explain the causation of this disease. One of the most important today is that in which psychological factors are given a paramount although not a singular role in accounting for the development of ulcer.

Essentially, the psychosomatic hypothesis is that peptic ulcer is produced as the result of various psychic stresses (1, 71) operating in association with various other factors such as constitution (1) which combine to produce physiological changes resulting in the development of peptic ulcer. This concept is based upon the premise as developed by Alexander that peptic ulcer has a "multicausal origin." As Alexander (1) expresses it, "local or general somatic factors as yet ill defined must be assumed and only the coexistence of both kinds of factors, emotional and somatic, can account for ulcer formation." The relative proportion of somatic and emotional factors in any one case may vary. Inherent in this concept is the theoretical assumption that all disease is psychosomatic inevitably since emotion effects all physiological processes through the nervous system.

Therefore in delineating the evidence to support a *psychosomatic* hypothesis, the following will be defined:

Somatic factors: (A) Excessive hydrochloric acid can produce peptic ulcer; (B) Hydrochloric acid secretion is affected by vagal activity which in turn is regulated by cortical and hypothalamic activity; and (C) Other organic factors, some well defined, some poorly defined, some yet to be defined, contribute to the pathogenesis of the ulcer.

Psychic factors: (D) Certain psychodynamic conflicts, phenomena, and personalities have been described to explain the psychogenic force behind the psychophysiological stimulation of the stomach. (E) In addition, it has been demonstrated that emotional stress can effect the secretion of acid in man so as to produce superficial gastric ulceration. In animals, acute peptic ulcers have been produced with emotional stress.

Somatic Factors

(A) *Evidence for premise that peptic ulcer is produced by an excessive secretion of hydrochloric acid.* We have much evidence to demonstrate that an excess of hydrochloric acid is an essential factor for the production of peptic ulcer.

Mann and Bollman (42) demonstrated that exposing the gastric mucosa of animals to sustained excessively high concentrations of hydrochloric acid produced stomach ulcers. Other investigators (65) by administering histamine in beeswax to animals produced an excessive secretion of acid producing stomach ulceration. This reaction to histamine, i.e., to produce an excessive secretion of acid and subsequent stomach ulceration, has also been reported to have occurred in man as a side effect to administration of intravenous histamine (28). In post-gastro-jejunostomy patients there is a 20 per cent occurrence of ulcer apparently from an excess amount of acid

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being in a site (the jejunum, as a result of the stomach by-passing operation) where it is usually not present (36, 43). Furthermore, it is a well-established fact that in the majority of patients with peptic ulcer the volume, concentration and output of hydrochloric acid are increased, the hypersecretion persisting continuously in the absence of stimulation such as food (7). Conversely, by decreasing acid secretion (volume and/or concentration) by vagotomy (15), antacids or gastrectomy, healing of the ulcer results. In addition, to further support this point, it is important to note that peptic ulcer *does not* occur in patients with complete lack of hydrochloric acid (as in pernicious anemia) (32). It can thus be surmised, based upon the aforementioned data, that acid is necessary for the development of chronic peptic ulcer and that only parts of the gastrointestinal tract which are exposed to acid are candidates for peptic ulcer.

(B) *Evidence that hydrochloric acid secretion in the stomach is primarily and predominantly under the control of the nervous system and, more specifically, the vagus nerve which in turn is under the control of various cortical areas and thalamic areas of the brain.* Various theories, which are not accepted today, have been advanced in the past to explain the hypersecretion of hydrochloric acid. Among those hypotheses which have not been experimentally and clinically verified in man is that secretion of substances which stimulate acid production such as histamine (63) and/or decreased enterogastrone (55) is responsible for the hyperacidity in ulcer patients. Similarly, there is no conclusive evidence that in peptic ulcer there is uniformly hyperactivity of the gastric antrum which, it is postulated, would result in excessive gastrin production (which hormone is said to stimulate hydrochloric acid secretion) and thereby produce the excess acid necessary for peptic ulceration (16, 36). An interesting, but still unproven hypothesis is that the hypothalamus produces a hormone stimulating pituitary secretion of corticotrophin, the latter acting upon the adrenal cortex releasing various adrenal hormones that stimulate the parietal cells of the stomach to secrete acid and produce an ulcer (26).

The oldest and most accepted hypothesis explaining the hypersecretion of hydrochloric acid in ulcer formation is that gastric secretion in man is predominantly neurogenic. It has been known for some time that stimulation of the vagus nerve produces hypersecretion of acid and in turn that stimulation of the sympathetics produces a decrease in secretion (8). To bear this out, it is also known that complete division of the vagus reduces acid secretion (15), only a small amount of acid remaining as a result of hormonal stimulation.

Cushing (10) postulated a parasympathetic center in the diencephalon connected with the vagus nerve. He said that autonomic imbalance (as a result of intracranial operation, severe head injury, or emotional stress) and subsequent excessive activity of the center caused hyperactivity of the vagus nerve (vagotonia) which in turn resulted in hypersecretion of hydrochloric acid, vascular spasm and areas of necrosis causing the devitalized mucosa to succumb to the acid juice and thereby produce an ulcer.

The aforementioned data, in association with other facts, allowed Kirsner and Palmer (36) in their excellent review of this subject to conclude that "we can authoritatively assume that the hypersecretion of duodenal ulcer is mediated by the vagal mechanism and that furthermore vagal activity is increased."

That the cerebral cortex plays a significant role in producing the secretion of hydrochloric acid probably through its connections with the vagus nerve has been demonstrated by the findings of various neurosurgeons and neurophysiologists working with topectomy, lobotomy and other surgical procedures on the brains of animals and men. They suggest that stimulation of cortical area six can increase acid secretion (66). Stimulation of this area increases acidity and pepsin content. In man, Carpenter (9) reports that area 11 of the cortex if bilaterally ablated may inhibit gastric function.

(C) *Other factors possibly contributing to the development of the peptic ulcer.* a) The role of pepsin: Even though pepsin increases in peptic ulcer patients along with hydrochloric acid, and pepsin greatly increases the digestive power of acid, it apparently is not the essential factor in ulcer formation because acid alone can produce an ulcer (54).

b) There is no clear-cut evidence that there is a decrease in the mucous protective barrier (25), or gastric atrophy (49), or vascular

changes (14), or gastritis (49), or infection (36), or nutritional or vitamin deficiencies (38).

c) While some decrease in tissue resistance seems possible and probable, this has yet to be conclusively demonstrated (37). Alexander raised the possibility of a constitutional or acquired weakness of the stomach as being necessary for ulceration inasmuch as all patients with a gastric neurosis or chronic functional hypersecretion do not develop ulcers and the organic factors seem necessary to complete the picture. Jost (31) has unsuccessfully attempted to demonstrate genetic differences in the autonomic nervous system as a *locus minoris resistentiae*. Certainly hereditary factors seem of some importance as revealed by a familial incidence of 13 per cent and the reported occurrence of ulcer in identical twins (12).

d) Alexander (1) furthermore emphasizes the role of *chronic* stimulation of the *empty* stomach as an etiologic factor. He feels that the empty stomach of the ulcer patient is chronically exposed to excessive hydrochloric acid and stomach hypermotility in readiness for its receiving food due to excessive and chronic continuous psychic stimulation. This he feels can contribute to ulcer formation. He quotes the work of Silbermann (56) with sham feeding of dogs to support his thesis. Silbermann created artificial esophageal fistulae in a series of dogs so that the food they ate never reached their stomachs after being swallowed but would fall to the ground. The dogs would repeat their swallowing of food over and over again for upwards of 45 minutes. Their stomachs were therefore constantly being stimulated and awaiting food (which was never forthcoming because of the fistulous by-pass), and there was such a powerful continuous stimulation of the stomach to secrete acid that ulcer formation resulted. Alexander feels that a similar situation in man, i.e., of having an empty stomach constantly waiting for food (as a result of psychic stimulation) which never arrives, may result in a high acid secretion in a susceptible empty stomach which over a long period may predispose to ulcer formation.

e) Cultural and environmental factors: Ivy and his associates (30) in their monumental work on peptic ulcer point out that it has long been known that ulcer is related to irregular living habits or prolonged nervous tension and fatigue. Furthermore, cultural pressures seem to be significant in the fact that more American Negroes get ulcers than African Negroes. There was in increase of ulcers during the air-raids in England during World War II (19).

f) The role of hormones and sex differences: Sex hormones seem to play some role in the development of peptic ulcer in that there is an infrequency of active ulcer in women during pregnancy (53), but this role has not been further defined. Furthermore, many more males develop peptic ulcer than women (3, 27, 51). Ten males develop peptic ulcer as compared with one woman after the age of 20. There has been a sharp increase in the number of males developing peptic ulcer since 1900 before which more women than men suffered from ulcer. Various authors (46) have explained this change on the basis of a shift in the psychological and social status of the woman in our modern day culture. Kezur and his co-workers (35), however, note that the basic conflict found in males with peptic ulcer is similar to that found in women.

Summary of Somatic Factors

Thus on the basis of the aforementioned evidence the following may be postulated: Various areas of the cerebral cortex *stimulate* the autonomic center of Cushing in the diencephalon (probably the hypothalamus) which *stimulates* the vagal nuclei in the floor of the fourth ventricle in the medulla which *stimulate* the vagus nerves to produce an increase of hydrochloric acid and hypertonicity of the stomach wall which in association with certain unknown factors (constitutional, genetic, etc.) produces ulcer.

Psychic Factors

Emotional factors have long been demonstrated to have a definite effect on gastric function. "Symbolic language", used to express extreme emotions in our language, frequently exploits the gastrointestinal canal for its purpose—e.g., one has difficulty "stomaching a person" or one "vomits forth". Dunbar (18) notes that "Hippocrates in 640 B. C. was said to have cured King Percidas of Macedonia of an organic symptom of his gastrointestinal tract by analysis of a dream." Emotionally the

gastrointestinal tract has great meaning to the infant, and this importance is often carried into adult life, e.g., being fed and feeling secure and loved may be equated.

In 1847, William Beaumont (5), during his study of the gastric functions of the stomach of Alexis St. Martin, an Indian with a gastrostomy, in addition to making various observations on the physiology of St. Martin's gastric function, noted that this function was affected by emotional stress. In 1857, William Brinton wrote the first book on peptic ulcer in which he said, "mental anxiety so frequently coincides with ulcer that we are fully entitled to regard it as a more or less immediate cause." Certainly based upon our present day knowledge, it can be said that most if not all ulcer patients have emotional difficulties of some severity and that emotional conflict and stress play a very important role in provoking the onset and exacerbation of most ulcers. For example, Davies and Wilson (11) have shown that in 84 per cent of the cases studied, ulcer symptoms initially began after emotional stress.

It is essential thus that we determine: 1) What type of personality, stress, or psychodynamic conflict, *if any*, is susceptible to the development of ulcer? ("The psychological predisposition.") 2) Is this personality, stress, or psychodynamic conflict capable of producing hypermotility and ulceration of the stomach and duodenum?

A) *Evidence for a specific personality type.* The earliest personality investigations in reference to peptic ulcer were in the field of describing the personality, i.e., the overt behavior of ulcer patients. Clinicians intuitively sensed that these patients were emotionally disturbed. What remained to be determined was whether there was anything in the manifest overt behavior of these patients that they had in common and, if so, if it contributed to the genesis of their illness.

In 1932, Walter Alvarez (4, a, b) described the ulcer personality type as keen, nervous, active and hard living. At about the same time, Cushing (10) added "highstrung and go-getter" to this conceptualization. Draper and Touraine (17) in calling attention to unconscious factors noted that ulcer patients were emotionally "controlled". Moschowitz (48) added hyperirritability and hypersensitivity, and Sullivan and McKell (62), the craving for affection and intense desire for superiority to this characterological picture.

Finally Kapp, Rosenbaum and Romano (34) in 1945 studied a group of 20 men with peptic ulcers and found that their overt behavioral manifestations of personality greatly varied from the driving hard-working ambitious business man to a passive effeminate or openly acted out dependent personality. They felt there was no uniform peptic ulcer personality but that ulcer patients have in common a *typical unconscious* conflict situation.

In conclusion, it would seem then that there is no specific overt personality common to all ulcer patients, except that it is the personality of an emotionally disturbed person.

B) *Evidence indicating the existence of a specific stress situation or psychodynamic conflict, conscious or unconscious, that might be capable of contributing to the development of ulcer through an increase in secretion of hydrochloric acid.*

Historically, many attempts have been made to correlate psychological stress with physiological and pathophysiological changes in the stomach.

Beaumont (5) in 1847 noted that fear and anger inhibited gastric secretion in Alexis St. Martin. In 1932, Draper and Touraine (17) published some psychological observations on ulcer patients in whom they found chronic anxiety as a focal psychological problem. This anxiety resulted, they found, from the threat of an excessive feminine component in the personalities of their male patients.

From the period of 1934 to 1950, Franz Alexander's (2) finding of repressed dependency strivings being the focal psychodynamic conflict in ulcer patients stood unchallenged and was accepted by most workers in the field. (Alexander's work will be discussed later in this section in more detail.)

Wittkower (69) in 1935 found that anxiety, resentment and pleasure producing experiences (suggested to experimental subjects under hypnosis) effected gastric acid secretion. The response to these stimuli, while constant in each subject, was highly variable in different subjects, the same stimulus, however, apparently consistently producing an increase of acid secretion in one patient and a decrease in another.

Mittelmann and Wolff (46) on the basis of experimental observations on a series of patients with and without ulcer concluded that the effect of sustained emotions of anxiety, conflict, feelings of being caught, insecurity, embarrassment, resentment, guilt, self-denunciation and helplessness was to increase hydrochloric acid secretion and peristalsis and was chronologically associated with the production of ulcer symptoms in their patients.

Wolf and Wolff (71) several years later were able to demonstrate in their subject "Tom" (a man who as a result of an operation had an opening of his stomach onto his abdominal wall, i.e., a gastrostomy) specific changes in his gastric mucosa which they were able to directly examine during various emotional states. During feelings of sadness which involved a feeling of withdrawal, Tom's gastric mucous membrane paled and peristalsis diminished. During anger, hostility and anxiety, there was an increase in the same functions and engorgement and swelling of the mucosa making it vulnerable to traumata and, they concluded, laying the groundwork for development of an ulcer. When these intense emotions were sustained, the hyperemia was sustained and minimal erosions then occurred with minimal trauma.

Margolin (44, a, b) psychoanalyzed a 22-year-old Negro girl with a large gastric fistula (much like Wolf and Wolff's "Tom"), while his associates (67) correlated his psychological findings with physiological studies which they performed on her stomach at the same time. He emphasized the importance of taking into consideration unconscious mental functioning in evaluating the relationship between emotional stress and physiological dysfunction. (Wolf and Wolff's work was, in contrast to Margolin's, essentially with conscious material.) Margolin found three types of gastric activity which he correlated with unconscious psychic processes. He felt their various gastric physiological states expressed interaction between a "defense mechanism, an instinctual impulse or a transference manifestation in a specific, repetitive and predictable way: e.g. *synchronized low activity* of the stomach occurred when reaction formation was the dominant defense against a repressed impulse seeking expression"; *synchronized high activity* occurred when a repressed impulse was close to emerging into consciousness; and *asynchronous, dissociated* or *random activity* when the defense mechanism functioned well so as to maintain the patient in a state of psychic equilibrium i.e. although the patient was consciously unaware of any emotional stimulation, there was unconscious stimulation producing dissociated activity of the stomach.

Garma and his associates (23) in South America have utilized various concepts of Melanie Klein and her group in their interpretation of the psychodynamics involved in peptic ulcer formation. Garma has symbolically interpreted the focal conflict of ulcer patients as the introjected mother (equated with food which is difficult to digest) internally biting and digesting the stomach of the patient who has provoked such a punishment as a result of his guilt over his oral aggressive wishes against his ambivalently loved and frustrating mother. The ulcer symbolically equalled the bite of the mother. Garma's work in many ways correlates with the findings of Szasz and his associates (64) in that they feel as does Garma that a major psychological factor in ulcer patients is oral aggression.

Mirsky (45, a, b, c, d, e) and his associates have performed significant work with the plasma pepsinogen content of the blood and the uropepsin content of the urine. Plasma pepsinogen parallels gastric pepsin content, pepsin apparently being excreted in the urine as uropepsin. Inasmuch as pepsin secretion generally parallels gastric acid secretion, Mirsky had a good determinant (by measuring either plasma pepsinogen or uropepsin) of gastric secretory activity in response to emotional stress. Mirsky has confirmed Alexander's finding that gastric secretion increased with frustration of dependency impulses. Furthermore, as a result of his studies with normal control patients, Mirsky found that some patients had hypersecretion of pepsinogen although they were to all intents and purposes normal physically without any symptoms or indications of ulcer being present. This led him to hypothesize that some individuals are born with a hypersecretory, and others with a hyposecretory, tendency. He postulated that the inborn secretory activity of the stomach determines the infant's oral needs which in turn might effect the child's relationship with his mother, in that a *hypersecretor* (with consequently very great oral

needs) might react to his mother as a rejecting mother because his "innate" excessive gastric activity creates associated excessive oral needs which she is unable to meet. Thus because of this initial inborn physiological oral need, the child's relationship with his mother becomes so distorted that his dependency needs are beyond the pale of gratification. When such a person reaches adulthood and is exposed to a stress associated with frustration of his dependency needs, he might respond to this frustration automatically through hypersecretion which if maintained over a prolonged period might result in peptic ulcer. Rosenbaum (51) questions the universal application of Mirsky's theory in that in most patients with ulcer, Rosenbaum feels, he found the oral dependent period of childhood characterized by actual real psychological deprivation and trauma by an *intensely rejecting* hostile mother figure. He feels that Mirsky's hypersecretor's unsatisfied oral needs may or may not be associated with real maternal deprivation, and either one or both of these factors might result in a frustration of dependency needs in the ulcer patient leading to peptic ulcer.

Today, two main theories dominate the thinking about peptic ulcer etiology. The first of these, developed by Alexander and his group, proposes a specific psychological conflict as the causative psychological factor, while the second theory, proposed by Mahl, maintains that anxiety, irrespective of source, is crucial to the development of peptic ulcer.

As previously mentioned, Alexander's concept of ulcer etiology has stood unchallenged since 1934 when it was first proposed. During the past five years, the work of Mahl has stimulated a great deal of discussion in the field of peptic ulcer and its causes, and has resulted in some questioning of certain of Alexander's concepts.

Alexander (2) in 1934, on the basis of his psychoanalytic work with a small number of ulcer patients, concluded that the basic problem in ulcer was the conflict between their repressed unconscious passive receptive dependency needs and their conscious ideas of independence. He postulates that the intense oral receptive drive in these patients and their inordinate desires for love, dependency, and to be taken care of, are frustrated by external reality or rejected unconsciously by internal functions (the superego) because of their incompatibility with aspirations of the patient's ego for independence. These frustrated impulses arouse anxiety and find expression by regression to a desire to be fed. Associated with this regression are gastric activities associated with being fed (hypersecretion, hypermotility and hyperemia of the stomach) which sustained over a long period of time can produce ulcer. There may result from this rejection of the patient's dependency needs, a reactive oral aggression. As a denial of his dependency needs, the patient may overcompensate by successful achievement. This accounts for the oft-described picture of the ulcer patient as the successful businessman with repressed dependency needs. Alexander in addition to his aforementioned psychodynamic formulation postulates the existence of unknown organic factors. It is significant to note that Stine and Ivy (61) have found that over 300 cases have been reported in the literature by various authors confirming Alexander's concept of repressed dependency as the focal conflict in ulcer patients.

In 1949, Mahl (40, a), in his doctoral dissertation at Yale University, postulated the "anxiety hypothesis" of peptic ulcer etiology. Mahl has been greatly influenced by the learning theory contributions of Dollard and Miller (13). Mahl concluded on the basis of his experimental work with animals (40, a, b), and confirmed later with humans (41), that chronic anxiety or fear aroused by any stimulus is the cause of hyperacidity of the peptic ulcer patient. Mahl emphasizes that he is describing physiological changes associated with *chronic* and not acute anxiety. In fact his finding indicated that with acute anxiety there is a *decrease* of stomach acidity. He notes that many authors before him have suggested chronic anxiety as the causative agent of ulcer on the basis of their clinical and experimental observations on patients and animals.

For example, during the air-raids in England during World War II perforation of ulcers increased, and this activation of ulcer was interpreted by the authors as being associated with anxiety (59). Gantt's dog, Nick, on whom various conditioned reflex experiments were performed, had an increase in hydrochloric acid with fear (22). Mittelmann and Wolff (46) found an increase in stomach acid with anx-

iety. (It is interesting to note that some of the case reports utilized by Stine and Ivy to support Alexander's "dependency hypothesis", such as the ones reported by Mittelmann and Wolff (46) are quoted by Mahl to support his anxiety hypothesis. Thus a problem of methodology and nosology here seems to complicate the picture.)

Mahl noted the aforementioned studies (in addition to others) to support his findings which were essentially that chronic anxiety or fear (he does not differentiate between fear and anxiety) produced an increase in acid secretion in dogs in controlled experiments. Later Mahl extended his findings to monkeys, medical students under stress, and patients under psychotherapy. Mahl believes it is not essential what the source of this anxiety is, i.e., whether it is produced by environmental conditions or by internal ideational or affective stimuli—or external or internal conflictual situations. He feels it is not important also whether these internal stimuli are conscious or unconscious, nor whether the anxiety is conscious or unconscious. He believes hydrochloric acid secretion is an innate physiological accompaniment or response to chronic anxiety. In fact, Mahl points out that Cannon's emergency theory (8) holds true for acute anxiety only (and not for chronic anxiety). Cannon postulated that in a dangerous situation requiring fight or flight, there is an increase in sympathetic nervous system activity and a decrease in parasympathetic nervous (and therefore vagal) activity. Mahl emphasizes that only in chronic anxiety is there an increase in vagal activity, as opposed to periods of acute anxiety where there will be a decrease in vagal functioning and a predominance of sympathetic functioning.

Alexander disagrees with Mahl's interpretation of ulcer pathogenesis. He feels that an individual in response to acute anxiety may act aggressively (producing sympathetic nervous activity with an increase in cardiac rate and a decrease of stomach acid as described by Cannon). *On the other hand*, the *ulcer patient*, in response to anxiety aroused as a result of his passive dependent strivings being frustrated, regresses to the state of a helpless child turning to a mother for help. Since one of the first disturbances in the infant is hunger, which is eliminated and satisfied by maternal feeding, the wish to be fed, to be taken care of and to

CHART I. Comparison of Mahl and Alexander's theories on causation of peptic ulcer

	Mahl	*Alexander*
STIMULUS:	Non-specific; may or may not be frustrated dependency needs. May be any emotional conflict.	Specific; dependency needs are frustrated.
	ANXIETY	
PSYCHODYNAMICS:	No psychodynamics involved.	Psychodynamics involved; anxiety triggers off a reaction pattern; the patient develops a feeling of helplessness.
MECHANISM OF ACID PRODUCTION:	Chronic anxiety has as an innate inborn accompaniment, the stimulation of the parasympathetics (the vagus) supplying the stomach, with the end result being hypersecretion of hydrochloric acid.	This patient regresses to the desire of being fed, and taken care of. This stimulates the parasympathetics producing an increased flow of gastric acid.

be loved becomes a major response to stress in the ulcer patient. At these times when the ulcer patient is under stress and has this need to be fed and protected, his parasympathetic nervous system predominates in its activity over the sympathetic and, via the vagus nerve, stimulates the hypersecretion of gastric acid as if his stomach was to receive food. Alexander thus feels that anxiety "triggers off" a variety of psychological chain reactions in an individual, the nature of the stimulus that arouses the anxiety (as well as other psychic factors) determining the varied type of psychological response that ensues. He believes that while the subject may be conscious only of anxiety, analysis of the psychological conflicts of the ulcer patient would reveal that there is a mobilization of the subject's wish to be taken care of, or fear of loss of a dependent relationship which in turn stimulates gastric activity. While Mahl does not dispute the fact that conflict over dependency yearnings may be a frequent cause of production of anxiety in ulcer patients, the "key" to the problem as viewed by Mahl is "chronic anxiety" and *not* "dependency". This chronic anxiety resulting from any cause or conflict, Mahl believes, has an automatic innate inborn accompaniment and result, namely an increase in gastric hydrochloric acid. (See Chart I for a comparison of the theories of Mahl and Alexander.) The ulcer patient, Mahl concludes, is thus subject to chronic anxiety which is the reason he has an excessive secretion of gastric acid. Mahl feels that this physiological response occurs universally as a reaction to anxiety and does not attempt to explain the reason one person develops ulcer and another one does not when exposed to chronic anxiety.

Summary of Psychic Factors

There is no specific personality picture for peptic ulcer patients, except that the overt behavior of the ulcer patient is that of an emotionally disturbed individual. It has been demonstrated that in man emotional stress is capable of producing an increase in gastric hydrochloric acid secretion, hypermotility, hyperemia and superficial ulceration of the stomach wall. The focal conflict of peptic ulcer, if any, has not been unequivocally defined. Alexander's theory of repressed frustrated dependency feelings in association with Szasz's concept of associated oral aggression, and Mahl's concept of chronic anxiety as a result of any type of psychodynamic conflict (not specifically "dependency") are the major hypotheses that have been developed to explain the psychic forces behind the development of peptic ulcer.

The Medical-Psychiatric Treatment of Peptic Ulcer

Initially, most ulcer patients seek out their internist or general practitioner for treatment of their ulcer. Only in rare instances do they receive psychiatric treatment in the early phases of their illness. (In fact, Stine and Ivy (61) reported that 80 per cent of the psychoanalysts they queried have never treated a case of peptic ulcer, in spite of its five to ten per cent incidence in the general population!) Thus it is the job of the general medical physician (i.e., internist or general practitioner), in addition to actively treating the peptic ulcer medically, to fully recognize and be aware of the psychological problems involved in the malfunctioning of these patients. He must understand the purpose of psychological treatment and attempt through the superficial psychotherapeutic techniques he feels capable of utilizing to enable his patient to adapt in a more realistic and healthy manner to his environment. Thus he must treat the patient as a totality, rather than as a disease. The attitude of the physician should be one of interest, kindness, tolerance, friendliness and reassurance. Rosenbaum (51), as have others, has formulated some significant recommendations about the psychological handling of these patients by a general practitioner. He believes that the physician even in his superficial psychotherapeutic handling of the ulcer patient can and must understand something of the meaning to ulcer patients of their crucial conflict centering about repressed dependency needs. These impulses require gratification either in a direct or indirect manner without inducing shame, guilt, or resistance on the part of the patient. Rosenbaum notes that this can be done by manipulating the environment, such as by ordering vacations at stressful periods or by enlisting the participation of important figures in the patient's environment,

and by a warm secure doctor-patient relationship where the patient is allowed time and freedom to talk to the doctor and may feel safe to freely express verbally his feelings (e.g., aggression) rather than achieve affective discharge through the visceral language of somatic symptoms. The general physician may find it useful to point out obvious superficial connections between stress in the patient's environment and exacerbation of his physical symptomatology. Rosenbaum feels that the physician can manipulate the transference (i.e., the doctor-patient relationship) by regulating carefully the frequency and length of office visits, prescribing medications at proper times, or even hospitalizing the patient during periods of emotional crisis. In the superficial psychotherapeutic technique utilized by the general practitioner, the patient forms a dependent and protected relationship with the physician which may continue for years (with the patient seeing his physician perhaps only once or twice a year, except at periods of stress when he may have to see him more often). The patient tends to identify with the doctor and to find in him a giving, non-demanding parent who in reality is a stronger more positive person than his ambivalently loved parents. In this superficial approach, there is no analysis of the transference. Most often this technique produces temporary help because underlying emotional difficulties still exist. Sperling (58), in fact, suggests that the technique of Federn (20) which was developed in the treatment of psychotics can be used in psychosomatic patients. This consists of having a third person at hand who can take over the intense dependency situation that may be developed between physician and patient, even in the superficial psychotherapeutic approach which Rosenbaum recommends. This person may be a close relative or husband, and the patient may develop a life-long remission as a result of successful and gratified dependency on this third figure.

In about 10 per cent of the patients treated for an initial attack of ulcer there may be a permanent remission (61) and thereby a practical cure. In fact, Stine and Ivy point out that the treatment of the acute attack is almost uniformly successful regardless of method employed, placebo being often as good as ordinary medications. Ninety per cent of these patients, however, have a recurrence within two years.

Psychiatric consultation and evaluation is advisable 1) if an ulcer recurs after the initial attack; 2) if there is an acute initial ulcer attack which is not responding to medical treatment or to the superficial psychotherapy of the internist; or 3) if an acutely, initially ill ulcer patient who, even though he is responding to the superficial support of the internist, nevertheless appears to have deep-seated emotional problems. These aforementioned recommendations are based upon the premise that an ulcer patient suffering his first attack of ulcer deserves a trial of medical therapy with the internist providing the psychotherapy himself. If the patient does not respond to this superficial psychological support and/or medical therapy, it is advisable to seek a psychiatric consultation so that if necessary contributory psychological factors may be evaluated and treated. The psychiatrist, upon seeing the patient in consultation, would determine the nature of the patient's emotional difficulties, whether the patient should best continue to be treated by the internist alone (perhaps with some suggestions from the psychiatrist) or whether the patient requires more intensive psychotherapy to be carried out by the psychiatrist, the latter collaborating with the internist so that the internist would continue his medical treatment of the patient.

In this combined medical-psychiatric regimen (which the author has developed more fully elsewhere (33)), the patient is under the simultaneous care of a psychiatrist and internist, both physicians actively cooperating in the care of the patient. It is essential that each physician completely understand and have mutual respect for the role and contribution of his collaborator. Each doctor thereby contributes his particular skill to the total treatment of the patient. In general, the psychiatrist is concerned with the psychiatric treatment of the patient and the internist with the medical aspects. Essentially, it is the purpose of the medical therapy to build up the patient's physical state so that he can successfully participate in and sustain psychotherapy, this psychotherapy being essential for total cure of the psychosomatic illness. In the combined medical-psychiatric teamwork approach, dur-

ing the acute ulcer attack, medical therapy is the primary and preferential form of treatment to be utilized. At this time, psychotherapy (by the psychiatrist) will be supportive with encouragement of a positive dependency relationship. As the illness becomes more chronic and/or better controlled, psychotherapy assumes the primary role. Medication is prescribed solely by the internist (although in consultation with the psychiatrist). The internist, on his part, would refrain from major psychological interpretation at all times. The medical, hospital, and home environment must be accepting of the psychosomatic nature of the patient's illness. Bernard (6) notes that "derogatory attitudes toward psychogenic illness on the part of the nursing and medical staff may reinforce the patients need to prove himself really sick by unconscious and sometimes conscious aggravation of his physical symptoms, sometimes to a fatal extent."

Medical treatment

Present-day medical therapy (30, 36, 52) continues to emphasize the neutralization or inhibition of gastric acid in order to enable the ulcer to heal. Anti-cholinergic agents such as Pro-Banthine and Piptal are also useful in diminishing the secretion of hydrochloric acid. A bland non-irritating diet and maintenance of good living habits (sleep, rest, fresh air) are also important.

The internist plays a very important role in the combined medical-psychiatric approach. Generally it would seem advisable for the internist to spend as much time as possible with these patients and to listen to their many complaints patiently, sympathetically and seriously. He must be reassuring and supportive. The patient should best be given clear-cut specific directions about sleep, rest, etc., which he must follow. Frequently, it is helpful to explain to the patient the pathophysiological phenomena associated with his illness and the action of the drugs he may be given. Before any physically manipulative procedures are performed on the patient (such as passing a gastric tube, sigmoidoscopy, gastroscopy), it is well to explain to the patient what they are and how they are performed. This will serve to allay his anxiety, make him more cooperative and actually facilitate the examination. Narcotics and sedatives must be used with care, inasmuch as these patients have strong dependency needs and there is a danger of drug addiction developing.

Psychiatric treatment

The author will not review the various methods of psychotherapy that can be used with these patients. These have been delineated elsewhere in the excellent texts on psychotherapy, such as those by Wolberg (70) and Fromm-Reichmann (21). Basically the psychiatric treatment of these patients follows the well-defined rules for psychoanalytic psychotherapy with neurotics. However, some of the particular problems one will encounter psychotherapeutically with ulcer patients, as well as with certain other groups of psychosomatic patients, deserve mention.

In the psychotherapeutic approach to the ulcer patient, basically one is, of course, primarily interested in the total patient rather than the illness itself. One must recognize that the physical symptoms of the ulcer may offer a major resistance to the patients' entering psychiatric treatment in that these patients feel that their difficulties are organic in origin and not psychogenic. Lidz (39) feels that a useful psychotherapeutic relationship can develop in a psychosomatic patient only when the patient recognizes that his emotional problems are sufficient to warrant psychotherapy even though he considers that it is because of his physical illness that his functioning in life has failed.

As in the superficial psychotherapeutic approach discussed previously, that may be utilized by the internist or general practitioner, dependency is an essential factor in the more intensive psychotherapeutic technique of the psychiatrist or psychoanalyst. A *positive dependent relationship* must be developed carefully between the psychotherapist and the ulcer patient. The psychiatrist must be even more giving, regular and dependable than he is with his usual psychiatric patients, for the problem of dependency is even more crucial with the ulcer patient than it is with the usual neurotic. Such a strong dependency relationship is necessary before any major psychological interpretations are made and probably before any physiological improvement will

occur. Patients must be encouraged to ventilate their hostility freely even in the initial stages of treatment and to learn to verbalize their anxiety, for a more free and spontaneous expression of their feelings is important for somatic improvement to occur.

It is the impression of the author as well as of others (47, 58) that interpretations in the course of psychotherapy are most useful when they are on an ego-analytic level, that is, when they cover characterological difficulties such as self-esteem, guilt, need for love and affection, and how these impulses may be frustrated externally by reality or internally by the individual. The author has found that deep "unconscious" "id" interpretations are of questionable value in dealing with most ulcer patients and may, in fact, be dangerous because of their frequently disturbing effects on many of these patients. Furthermore, they help the patient to avoid reality and to reinforce fantasy. This serves to weaken an already regressed ego. Reality requires reinforcement in these patients in whom there is a tendency for withdrawal, magical thinking, and somatic symptomatology. It is well to correlate the patient's life stresses and current life experience and environmental irritants with exacerbation of his somatic symptomatology and, furthermore, to realize that while the initial conditioning agent of his ulcer might have been frustrated dependency, anxiety or hostility, his stomach soon reacts not only to these specific conflicts but to all conflicts, and the nature of these conflicts and their content must be defined. The pathophysiological mechanisms associated with ulcer formation and activity should be explained to him. The visceral nonverbal language of the psychosomatic complaint may well be interpreted to the patient, and he must be encouraged to seek out the impulses he is unaware of behind his symptoms that exploit the soma as a substitute for proper affective expression. He must understand that forbidden impulses reaching awareness require understanding, tolerance, at times expression, at other times sublimation, at all times a healthy direction and utilization. In the case of certain impulses such as repressed aggression reaching conscious awareness and requiring expression, the patient's environment must be prepared beforehand to accept these new impulses which the patient may manifest suddenly and at times erratically as a result of therapy. Active interpretation of characterological or impulse defenses must be carefully and conservatively timed, for anxiety liberated too quickly as a result of premature or too active interpretation may cause a negative transference of an overwhelming nature to suddenly appear and a dangerous increase in physical symptomatology. Sperling (57, 58), however, does recommend that if the patient is very ill somatically, emergency treatment in the form of a "psychological shock" may have to be given. This consists of a direct, deep interpretation of the patient's unconscious destructive (masochistic) impulses. She feels that only this masochistic aspect of the patient's destructiveness should be interpreted, and while she notes that this type of "shock" does not produce any change in the basic personality, it may be life saving somatically in its favorable effect on the somatic difficulties. Furthermore, to have any real meaning it requires a follow-up with intensive psychoanalytic work. The patient must be made aware of the unconscious manifestations of his anxiety and be sensitized to, and must readily recognize, anxiety or its somatic equivalents when they appear. Because these patients use somatic symptoms as a means of resistance during negative phases of the treatment, they may complain of reactivation of their symptoms and attempt to cancel appointments with their therapist, using their physical status as an excuse for the cancellation. It is important that the patients be encouraged never to miss an appointment session, particularly because of their somatic illness, for if they are allowed to, their manipulation of the therapy will become progressively more marked and may become a serious impediment to their progress.

It is important that a very flexible technique be used psychotherapeutically with these patients. The analyst accustomed to a rigid procedural method in dealing with neurotics may have some difficulties in adjusting to the demands of this required flexibility. For example, during the intensive dependency stage of the treatment when the patient is very dependent on the therapist, in order to further foster this dependency, the analyst may decide to allow the patient to telephone him frequently to

prove to the patient his interest and desire to help. For the analyst who does not answer his phone during the day, this may pose a definite problem.

A cyclical relationship has been reported to exist between ulcer and psychosis by several authors. While this is certainly not true for all ulcer patients, it is valuable for the therapist to recognize the danger of psychosis occurring as the ulcer improves and to regulate his therapeutic approach accordingly. The Rorschach test and dream material of the patient give good clues to the existence of latent psychosis in these patients and may serve to forewarn the therapist of the danger of a psychosis hidden behind a deceiving facade. In this type of patient, face-to-face therapy (as opposed to analytic "couch" therapy) is advisable, for this position reinforces reality for the weakened ego of the pro-psychotic patient. In an ulcer patient with an impending psychosis, therapeutic goals are limited and therapy should be handled on the level of superficial psychotherapy which does not involve intensive probing of the personality but is characterized by support, ventilation and mild catharsis.

Ultimately the dependency transference must be interpreted and resolved, with the patient being encouraged to achieve a greater independence and maturity. In addition he achieves a more healthy identification with the analyst than he had with his ambivalently loved parents. As he does improve psychologically, the need for somatic symptomatology to be part of his psychic defense against anxiety ceases.

Winokur and Guze (68) point out, in summary, that "in essence psychotherapy becomes effective when the patient learns two things. First when he learns to perceive more adequately and differentiate more clearly and secondly when he learns through experience to act differently and more successfully for his happiness. It should be emphasized that psychotherapy can never attain significant success unless the patient learns and uses new behavioral sequences." It is thus the object of psychotherapy by providing the patient with an understanding of his past history and his present maladjustment to show him the necessity for change, and to proceed to change his environment and himself. As part of this change, the need for a visceral illness and the regression associated with it will no longer be necessary. The patient would recognize the self-destructive nature of his costly adaptive pattern, and the necessity for continued change would be reinforced. "The principle objective of treatment", as expressed by Robbins (50) and his associates, will then have been fulfilled which is "the development of the individual to the point where he can once more take his place and function in human relationships and in society."

As to the relative value of psychotherapy as compared with psychoanalysis, little scientific objective comparison is available. While Szasz (64) strongly recommends psychoanalysis as the treatment of choice in cases of peptic ulcer, Gildea (24) believes brief flexible psychotherapy is effective in 70 per cent of these cases where psychoanalysis is not necessary. Stein and his associates feel that group psychotherapy is of definite usefulness in aiding patients in whom chronic peptic ulcer is associated with a regressed rigid type personality (60).

The following is a patient's case history in whose treatment the author was able to successfully collaborate with an internist and in whom the therapeutic results were favorable.

Case history

The patient, a male television director who is at present 27 years old, developed a severe duodenal ulcer when he was 20 years old. His symptoms at the onset of the illness had been frequent bouts of epigastric pain of moderate to great severity. During the next two years, he had several attacks of hematemesis and melana and was hospitalized once for gastric hemorrhage. Shortly after developing the ulcer, he commenced continuous medical treatment under the care of an internist who confirmed the diagnosis of duodenal ulcer by x-ray. The treatment the internist instituted consisted of bland diet, antacid and antispasmodic therapy. After four weeks, the patient's peptic ulcer responded well symptomatically to this therapeutic regimen. However, the activity of the ulcer recurred two months later, and during the next two years he frequently required medical treatment for his

gastric malady. (*This course of remission and exacerbation is frequent with peptic ulcer.*)

When the patient was 22, he moved to a neighboring community and at that time entered treatment with another internist. (*It was later determined in the course of the patient's psychotherapy that one of the main reasons he changed internists was that he felt he could not "talk" to his former internist. By this he meant that he did not feel his doctor was sufficiently sensitive to his psychological problems.*) Although he had had no indications of bleeding for several months previous to this time, his ulcer had continued to pain him. His new internist noted early in his contact with him that the patient was under great emotional stress largely associated with his unhappy marriage and his poor relationship with his wife. He encouraged the patient to discuss his psychological problems with him which the patient did willingly. At one time during this period (*as part of the superficial psychotherapeutic technique the internist was utilizing*) the internist saw the patient's wife and attempted to conciliate their marital difficulties. For a short time, in fact, things did stabilize somewhat in the marriage, and the patient's ulcer seemed to respond in an improved manner to the medical therapy. (*The reassurance and support provided by the physician in addition to his constructive manipulation of the patient's environment seem important here in accounting for the patient's improvement. However, the temporary effect of this significant help did not last because of the apparently deep-seated nature of the patient's problems.*) A short time thereafter the strife at home recurred and the patient's ulcer became reactivated. This time, the internist recognizing the complicated nature of the patient's psychosomatic difficulties sent the patient for a psychiatric evaluation.

The patient when first seen by the psychiatrist was "resentful" that he had been "thrown like a ball to the psychiatrist" by the internist. (*The patient's resentment was the result of his feeling rejected by the internist upon whom he was dependent. This was due, in fact, largely to the poor preparation by the internist of the patient for entering psychiatric treatment and the suddenness of his decision to make the psychiatric referral. The internist himself had some conscious and unconscious resentment toward psychotherapy because of problems in his own personal life which had necessitated his wife's having had to seek psychiatric help because of their own marital problems. His feelings came out in his ambivalence about referring the patient and his handling of the preparation of the patient so as to cause the patient to become anxious about the referral and to develop feelings, of rejection and hostility. It is important to note that the patient's neurotically determined excessive dependency needs upon the internist also added to his feelings of rejection.*) However, this initial resistance of the patient to psychotherapy was quickly overcome. He was pleased when he found that psychiatric treatment was not threatening and demanding as he had assumed it would be but was in reality protective and accepting. (*The initial phase of psychiatric treatment was thus to meet the patient's frustrated dependency needs as much as possible and to allow him to ventilate his feelings more freely and thereby to develop a feeling of greater security in the relationship.*)

At the time the patient came to psychiatric treatment (when he was 23) his ulcer was extremely active and painful. Concomitantly, in his life situation, his relationship with his wife had deteriorated badly. They were constantly at odds and had not been speaking to each other for the previous two weeks. Psychotherapy at the time was essentially supportive. Initially medical therapy was intensified, the patient being put to bed for one week except for his visits to the psychotherapist's office. (*This early emphasis upon medical treatment was decided upon after discussion and collaboration between the patient's psychiatrist and his internist.*) During this initial period of three to four weeks, the patient's history, his present illness and his background were discussed. Psychological interpretations, except of a supportive reassuring type, were avoided, for it was felt that any added stress would serve only to cause the patient's illness to become further aggravated.

The patient discussed his childhood and history willingly. His father had been a wealthy motion picture executive, one of the early pioneers in the motion picture industry, a man who boasted that he was "self-made" and who was erratic and hostile, and got along

poorly with everyone he encountered. His mother was a sickly person, who was overwhelmed by the forceful dominating father, and who felt herself incapable of raising the patient, even though he was an only child.

From early infancy, the patient's upbringing had apparently been one starved of love and affection. He remembers having had numerous nursemaids as a child inasmuch as household help rarely remained in the home very long because of the difficulty they had in getting along with the patient's father. The father was dominant in the home and ran it in an authoritarian, rigid, unfeeling and insensitive manner. As the patient grew older, his mother remained chronically depressed. Even when she did spend time with the patient, she felt herself unable to give him any love or to meet any of his dependency needs. The patient's every move and activity was directed and controlled by his father—the hours he went to bed, his activity during the day, as well as the friends he saw socially. Whenever his mother attempted to show the patient any love or demonstrable affection, the father would become irritated and critical. The patient recalls his father "making fun of mother whenever she showed me any attention; he claimed she was babying me." The patient thus from an early age had a strongly ambivalent relationship with his father of whom he lived in constant fear, yet he admired and loved his father greatly and at the same time hated him. He felt his dependency needs rejected by his mother. The patient never openly expressed aggression toward his father, never spoke back to him and never manifested any overt resistance or rebelliousness toward him. He recalled that once when his father struck his mother, he had felt violently hostile and became frightened at his strong urge to attack his father. He did not, however, do or say anything. At that time, he recalls having had violent stomach cramps and a feeling of nausea. (*Here it is important to note the reaction of his stomach to the emotionally stressful situation just described, and the associated feelings of anxiety and hostility. There was an initial suppression of these affects when they first occurred, and a later repression of them. It is interesting to see the close correlation between the stress and the developing of an almost instantaneous somatic reaction. This stress-somatic response phenomenon was repeated several times after his initially experiencing it which was 8 years before his actual development of an ulcer.*)

When the patient was 19 years old and had just graduated from college (where he had shown an interest in, and an aptitude for, writing), he went to work in his father's office. Although he had a strong desire to work at the creative aspects of motion pictures, his father was opposed to this and insisted that he work in the administrative division of his company. It was at his father's office that he met his wife-to-be. She was a secretary, 18 years old, and herself too the production of an unhappy homelife. Her parents had been divorced when she was ten years old with the result that she was raised by an embittered alcoholic mother. After a whirlwind courtship lasting two weeks, the patient eloped with her. His father had been strongly opposed to his even having dated the girl; when they married, his father disowned him. (*A major factor in the patient's sudden decision to marry was his strong need to liberate himself, through rebellion, from his father's domination. Thereby he was able, in a tangential manner, to finally succeed in expressing hostility toward his father. Doing this impulsively was the only way he could manage this maneuver. That he felt he had to use such a self-destructive activity such as this in order to express his aggression shows the great fear he had of his father's retribution and the guilt he had about being hostile to his father.*)

The marriage was a poor one from the start. The patient had had little previous experience in relating to women (his wife was the first girl he had dated more than once), and he found that emotionally, culturally, and sexually he was poorly mated to his wife. There was some economic pressure because the patient had up to the time of his marriage been employed by his father. When he married against his father's wishes, he lost his job and had to seek employment elsewhere. Through one of his college professors who had been greatly impressed by his ability when he was a student, an interview was arranged with a television station which hired him in the capacity of a trainee-director. However, the combination of occupational pressures, emotional stress, and

economic and marital difficulties caused his first ulcer attack to occur when he was 21. It actually started during a bitter quarrel he had with his wife over his suspicions (which were later verified) of her sexual infidelity with a friend of his. (*It took a period of several months, with the patient receiving two to three psychotherapeutic sessions per week, for him to relate the aforementioned highly-condensed historical material. During this period he started to trust the psychotherapist, and a positive dependent transference commenced to develop.*) During this initial period of combined medical psychiatric treatment, the arguments at home temporarily abated, and the patient felt more secure in his newly found dependency relationship with the therapist. The activity of his ulcer diminished markedly, whereas for the several previous months it had been resistant to all medication. In fact, continuous medication was stopped by the internist three months after the patient commenced psychotherapy, from that time on medication being used only for short periods when the ulcer would exacerbate.

At the patient's place of employment, he apparently manifested a great deal of talent and ability and was advanced quickly. However, the pressure of his work was greatly requiring a large amount of independent thought, judgment, and activity which he was able to exert only so long as he received proper support at home and in therapy. Whenever there was an accumulation of any amount of tension or anxiety, whatever its source, his peptic ulcer would seemingly recur, and during the first year of therapy, there were several exacerbations. Three occurred after serious arguments with his wife. One occurred upon the sudden death of his father (who, incidentally, had reinstated the patient into his will, thereby leaving him a sizable fortune and permanently eliminating economic pressure as one of the sources of stress he had to encounter in the future). Another one correlated with the patient's mother remarrying a short time after his father's death and her leaving the United States. (*As was determined in therapy, at the time of his father's death, he had felt extreme guilt over death wishes he had felt toward his father, and his ulcer attack served as a type of punishment for these forbidden impulses. He had also felt extremely hostile and anxious about his mother's remarriage and subsequent departure from the United States which he interpreted as a rejection of his dependency and desertion, and final confirmation of her lack of interest in him; however, even though he repressed his hostility and denied his anxiety, the affects gained psychophysiological expression in the visceral terms of a peptic ulcer exacerbation.*) He was, however, able to verbalize in therapy, more completely than ever before, his affective reaction to both his father's death and his mother's subsequent remarriage, and to thereby gain an increased understanding into the relationship between stress in his life (*both the qualitative and quantitative factors involved*) and his developing a somatic aggravation of his ulcer. He began to understand that having dependency impulses was not "wrong", but that what was pathological was his denial of these impulses as was his being ashamed of and not expressing them and then feeling hostile and anxious over these repressed impulses when they were not gratified. At these periods of recurrence of the patients ulcer, active medication by the internist would recommence.

The patient frequently would complain to the internist of his discouragement with psychotherapy, that the expense was too great and the results too slow. The internist, who was sincerely committed to the collaborative medical-psychiatric approach, would listen to the patient sympathetically, point out to him that psychotherapy was *truly* a slow process requiring a great deal of sacrifice on the part of the patient, but that the results when it was successful were great and worth the effort. He would thereby encourage the patient to continue with therapy and offer him support and reassurance. (*Once when the internist himself was feeling resentment toward his wife's psychotherapy, he inadvertently expressed some hostility about psychiatry and psychiatrists to the patient. He then recognized his "slip" and attempted to "smooth it over". However, the statement had a disturbing effect on the patient, caused him to become extremely anxious, and in turn caused his ulcer to become re-activated. However, the patient was able to gain a great deal of insight as a result of his reaction and realized that now it was up to himself to decide*

the merits of psychotherapy and no longer lean upon the support and encouragement and judgment of the internist. (The patient felt towards the internist much as he felt towards his father—that his "permission" was necessary for his participation in analysis.) It was pointed out to him that leaning upon someone else's evaluation of therapy was important early in treatment (because he had little confidence in his own judgment), but now that he had been in treatment over a year, it must be his decision to continue or not to continue based upon his own experience. He decided to continue.)

As time went on, it became clear to the patient that the differences between him and his wife were realistically irreconcilable and the marriage was essentially a slowly destructive relationship which offered minimal positive gratification to him or his wife. There were some changes in the patient's behavior to his wife during this period, however. For example, in the past, whenever his wife had been overtly hostile to him, he would withdraw, become depressed and develop stomach cramps. As treatment progressed, he realized the value and necessity for his speaking up to his wife and expressing his resentment to her at appropriate times and more and more often did so. Nevertheless, the situation progressively deteriorated in the marriage. The patient's passivity was great, and he was frightened about making an aggressive forceful move toward divorce. He noted that once he had rebelled against his father, and he interpreted his present marriage as a punishment! What might be the result, he asked, if he rebelled against his present wife and left her? Finally after many months of emotional turmoil and dispute, he recognized the necessity for his obtaining a divorce. He mobilized the constructive forces present in his personality and proposed a dissolution of their marriage to his wife. She readily concurred, and they separated and divorced quickly. At this time, the patient sustained a marked increase in his anxiety and a mild depression which were associated with an attack of ulcer, but the exacerbation of the ulcer was mild compared with his previous bouts. (*His divorce from his wife was equated partially as a rejection of his dependency needs by an ambivalently loved object which produced a great deal of reactive anxiety, and partially as a hostile gesture arousing guilt and necessitating a symbolic punishment, i.e., an ulcer attack.*)

Several months after his divorce he met a girl at work with whom he had a great deal in common. She was employed in a similar capacity to his, was interested in writing, television, etc. After a slow, cautious, and yet intensive courtship they married. Sexually, from the start, their adjustment was excellent (whereas in his previous marriage, it had been very poor, intercourse having occurred about a dozen times in three years). Culturally they came from similar social backgrounds. His wife was a more adequate and mature woman than his first wife had been. She was warm, accepting of his dependency needs and interested in his growth and development as a person. From the beginning of their relationship he felt safe enough to openly express aggression to his wife at appropriate times, and she, as no one previously ever had in his environment, accepted it when she felt it was justified and tried to change the situation that had resulted in the production of the hostile impulse. He in turn was able more and more to reciprocally accept her expressions of hostility to him, something he had never been able to do previously without becoming very upset. He felt considerably strengthened by the fact that she was so genuinely interested in him and that she encouraged him to assume a more masculine, active and significant role in their marriage. He was able to renounce increasingly many of his childish dependent attitudes and become more mature in his behavior. During the first year of marriage, while the patient was still under therapy (his psychiatric therapy lasted three and a half years), his ulcer symptomatology ceased. During this first year, no medication was required and there was no further evidence of ulcer on x-ray. When treatment was terminated, he was leading a fuller life and showing remarkable growth and development. Three months after discharge he had no exacerbations of his symptoms.

Discussion. This patient with a history of peptic ulcer of three years duration when he first commenced combined medical-psychiatric therapy showed chiefly repressed dependency strivings which were unfulfilled as a result of a

traumatic emotionally deprived upbringing and a poor marital relationship with his wife. There was also a marked difficulty in expressing his hostility, associated with a chronic anxiety state. During his psychoanalytic therapy, when he was made more aware of his various repressed impulses, he expressed them more fully through a reorganization of his personality and various *changes* in his life situation, one of which was to divorce his wife and remarry a more mature, adequate woman who he subsequently met. As these favorable *changes* were accomplished, the patient's anxiety level diminished greatly, and there was a concomitant improvement in his somatic status. A very significant factor in the patient's physiological and psychological improvement was his developing a close warm reciprocal relationship with an adequate marital partner from which relationship he derived considerable emotional satisfaction, pleasure, growth and development. This in turn reinforced his own maturity and made him able to meet new life situations on his own without the continuance of psychiatric aid.

Problems in the Psychosomatic Hypothesis of Ulcer Yet To Be Solved (29, 36, 61)

1) Specificity: Why one patient develops one specific psychosomatic difficulty such as ulcer under stress, and the other develops another illness is not known.

2) Experimental verification must be made of the assumption that successful psychotherapy significantly and permanently decreases hyperacidity present in patients with peptic ulcer. If it does not have a permanent effect on acid production, how can we account for the demonstrated benefit derived by many patients under psychiatric treatment?

3) Intensive follow-up of cases of ulcer patients who have been successfully treated psychiatrically must be carried out to determine the efficacy of analysis in these patients.

4) Chronic peptic ulcer has yet to be produced experimentally in man; the possibility of this occurrence will very likely have to be demonstrated in the future. What other organic factors are important in ulcer formation besides an increase in acid?

5) Mahl has demonstrated that the hypersecretion of acid during experimentally induced anxiety diminishes promptly when tension is relieved. However in duodenal ulcer, hypersecretion may persist even despite the healing of the ulcer itself. These findings cause several questions to be asked. a) If acid is a chief cause of ulcer, why does an ulcer heal even when acid is in excess? b) Does the continued secretion of acid mean continued emotional stress?

6) Further clarification of the psychodynamics involved in peptic ulcer formation is essential. Control cases are necessary.

7) It is important to prove experimentally and conclusively that a direct or indirect relationship between vagal hyperactivity and emotional stress exists.

Summary

A psychosomatic etiology and therapeutic regimen for peptic ulcer have been discussed. Essentially this hypothesis is that psychic conflict via the vagus nerve stimulates the hypersecretion of hydrochloric acid and stomach hypermotility.

It is hypothecated that these factors in association with presently unknown organic factors (constitutional, genetic, hormonal, etc.) combine to produce a chronic peptic ulcer. The psychic conflict of ulcer has not been clearly defined, but today the most widely accepted theories are that it is either the result of *frustrated dependency strivings and/or aggression and/or chronic anxiety.* The specificity of ulcer, i.e., why one patient under stress develops ulcer, and another patient some other psychosomatic illness, is not known. There are many other problems yet to be solved in reference to ulcer which are enumerated. In the treatment of ulcer, the author recommends a close collaboration between internist and psychiatrist. A successfully treated case is presented which the author believes illustrates the beneficial effect on the course of a peptic ulcer as the result of a successful collaborative therapy by an internist and psychiatrist. Various recommendations are made about the psychotherapeutic management of the ulcer patient. It is the authors impression that the ultimate goal of psychotherapy must be to reproduce new, changed behavioral sequences in a disturbed ulcer patient so that the level of anxiety produced

during his life activities will be consequently diminished. With a more mature, independent type of behavior, the "regressive visceral language" of the ulcer will no longer be necessary, and somatic improvement will occur.

The author wishes to express his appreciation to the following physicians who through their stimulating discussions with him about many of the concepts and ideas expressed in this paper have helped him to more clearly formulate many of the aforementioned ideas: Doctors A. Balaban, H. Hauck, the late Felix Hoffman, Julius Eisenberg, and Harold Leder.

BIBLIOGRAPHY

1. Alexander, F.: *Psychosomatic Medicine.* New York: W. W. Norton & Co., 1950.
2. Alexander, F.: The influence of psychologic factors upon gastrointestinal disturbances, a symposium. General principles, objectives, and preliminary results. *Psychoanal. Quart., 3:* 501, 1934.
3. Alsted, G.: *Changing Incidence of Peptic Ulcer.* London: Oxford University Press, 1939.
4. (a) Alvarez, W. C.: Ways in which emotions can effect the digestive tract. *J. A. M. A., 92:* 1231, 1929.
   (b) Alvarez, W. C.: *Nervous Indigestion.* New York: Paul B. Hoeber, Inc., 1930.
5. Beaumont, W.: *Experiments and Observations on the Gastric Juice and the Physiology of Digestion.* Plattsburgh: E. P. Allen, 1833.
6. Bernard, V.: Discussion on failures in psychosomatic cases. In *Failures in Psychiatric Treatment.* American Psychopathological Association, Proceedings, *37,* 118, 1948. New York: Grune and Stratton.
7. Bloomfield, A. L.: The problem of gastric hyperacidity. *Am. J. Digestive Dis., 6:* 700, 1939.
8. Cannon, W. B.: *Bodily Changes in Pain, Hunger, Fear and Rage.* New York: D. Appleton Co., 1929.
9. Carpenter, M.: The influence of frontal topectomy upon gastric secretion. *J. Nerv. & Ment. Dis., 113:* 52, 1951.
10. Cushing, H.: Peptic ulcer and the interbrain. *Surg., Gynec. & Obst., 55:* 1, 1932.
11. Davies, T. D., and Wilson, A. T.: Observations on the life history of chronic peptic ulcer. *Lancet, 2:* 1353, 1937.
12. Doll, R., and Buck, J.: Hereditary factors in peptic ulcer. *Ann. Surg., 15:* 135, 1950.
13. Dollard, J., and Miller, N. E.: *Personality and Psychotherapy.* New York: McGraw-Hill Co., 1950.
14. Doran, F. S.: Etiology of chronic gastric ulcer (observations on the blood supply of the human gastric mucosa with a note on the arteriovenous shunt). *Lancet, 260:* 199, 1951.
15. Dragstedt, L. R., Harper, P. V., Tovel, E. B., and Woodward, E. R.: Section of the vagus nerves to the stomach in treatment of peptic ulcer. *Ann. Surg., 126:* 687, 1947.
16. Dragstedt, L. R., Woodward, E. R., Oberhelman, H. A., Storer, E. H., and Smith, C. A.: Effect of transplantation of the antrum of the stomach on gastric secretion in experimental animals. *Am. J. Physiol., 165:* 386, 1951.
17. (a) Draper, G., and Touraine, G.: The man-environment and peptic ulcer. *Arch. Int. Med., 49:* 616, 1932.
   (b) Draper, G.: The emotional component of the ulcer susceptible constitution. *Ann. Int. Med. 16:* 663, 1942.
18. Dunbar, F.: *Emotions and Bodily Change.* New York: Columbia University Press, 1954.
19. Editorial: The rise in peptic ulcer. *Brit. M. J. 2:* 665, 1944.
20. Federn, P.: Psychoanalysis of psychosis, I–III. *Psychoanal. Quart., 17:* 246, 1943.
21. Fromm-Reichmann, F.: *Principles of Intensive Psychotherapy.* Chicago: University of Chicago Press, 1950.
22. Gantt, W. H.: *Experimental Basis for Neurotic Behavior.* New York: Paul B. Hoeber, Inc., 1944.
23. Garma, A.: On the pathogenesis of peptic ulcer. *Internat. J. Psychoanal., 31:* 53, 1950.
24. Gildea, E. G.: Special features of personality which are common to certain psychosomatic disorders. *Psychosom. Med., 11:* 273, 1949.
25. Glass, G. B. J., and Boyd, L.: A study of the alleged deficiency of gastric mucin in the stomach of humans with peptic ulcer. *Gastroenterology, 16:* 697, 1950.
26. Gray, S. J., Benson, J. A., Jr., Spiro, H. M., and Reifenstein, R. W.: Effects of ACTH and cortisone upon the stomach; its significance on the normal and in peptic ulcer. *Gastroenterology, 19:* 658, 1951.
27. Halliday, J. S.: Epidemiology of psychosomatic affections. *Lancet, 2:* 185, 1946.
28. Iams, A. M., and Horton, B. T.: An ulcer which appeared in the stomach of a man receiving histamine intravenously. *Gastroenterology, 6:* 449, 1946.
29. Ivy, A. C.: The evidence pertaining to the psychosomatic aspects of peptic ulcer. *J. Nerv. & Ment. Dis., 111:* 519, 1950.
30. Ivy, A. C., Grossman, M. I., and Bachrach, W. H.: *Peptic Ulcer.* Philadelphia: Blakiston, 1950.
31. Jost, H., and Sontag, L. W.: The genetic factor in autonomic nervous system function. *Psychosom. Med., 6:* 308, 1944.
32. Kahn, J. R.: Absence of peptic ulcer in pernicious anemia. *Am. J. Med. Sc., 194:* 463, 1937.
33. Kaplan, H.: The combined medical-psychiatric treatment of psychosomatic disorders; a collaboration between physicians. *Dis. Nerv. System* (To be published).
34. Kapp, F. T., Rosenbaum, M., and Romano, J.: Psychological factors in men with peptic ulcer. *Am. J. Psychiat., 103:* 700, 1947.
35. Kezur, E., Kapp, F., and Rosenbaum, M.: Psychological factors in women with peptic ulcers. *Am. J. Psychiat., 108:* 308, 1951.
36. Kirsner, J., and Palmer, W.: The problem of peptic ulcer. *Am. J. Med., 13:* 615, 1952.
37. Kirsner, J., and Palmer, W. L.: The present management of peptic ulcer. *Illinois M. J., 94:* 357, 1948.
38. Li, T., and Freeman, S.: The frequency of peptic ulcer in protein deficient dogs. *Gastroenterology, 6:* 140, 1946.
39. Lidz, T.: Principles and Techniques of Therapy in Psychosomatic Disease. In *Psychiatric Treatment.* Association for Research in Nervous and Mental Disease, Proceedings, *31:* 56, 1953. Baltimore: The Williams & Wilkins Co.
40. (a) Mahl, G. F.: Effect of chronic fear on the

gastric secretion of hydrochloric acid in dogs. *Psychosom. Med., 11:* 30, 1949.

(b) Mahl, G. F.: Relationship between acute and chronic fear and the gastric acidity and blood sugar levels in the Macaca mulatta monkeys. *Psychosom. Med., 14:* 182, 1952.

41. Mahl, G. F.: Anxiety, hydrochloric acid secretion and peptic ulcer etiology. *Psychosom. Med., 14:* 158, 1950.
42. Mann, F. C., and Bollman, J. L.: Experimentally produced peptic ulcer; development and treatment. *J. A. M. A., 99:* 1576, 1932.
43. Mann, F. C., and Williamson, C. S.: The experimental production of peptic ulcer. *Ann. Surg., 77:* 409, 1923.
44. (a) Margolin *et al.*: Variations of gastric functions during conscious and unconscious conflict states: In *Life Stress and Bodily Disease.* Association for Research in Nervous and Mental Disease, Proceedings. Baltimore: The Williams & Wilkins Co., 1950.

(b) Margolin, S.: The behavior of the stomach during psychoanalysis. *Psychoanal. Quart., 20:* 349, 1951.

45. (a) Mirsky, I. A., Kaplan, S., Broh-Kahn, R.: Pepsinogen excretion (uropepsin) as an index of influence of various life situations on peptic secretion. In *Life Stress and Bodily Disease.* Association for Research in Nervous and Mental Diseases, Proceedings. Baltimore: The Williams & Wilkins Co., 1950.

(b) Mirsky, I. A., Block, S., Osher, S., and Broh-Kahn, R. H.: Uropepsin excretion by man. I. The source, assay, and properties of uropepsin. *J. Clin. Invest., 17:* 818, 1948.

(c) Mirsky, I. A., Fetterman, P., Kaplan, S., and Broh-Kahn, R. H.: Blood plasma pepsinogen. I. *J. Lab. & Clin. Med., 40:* 17, 1952.

(d) Mirsky, I. A., Fetterman, P., and Kaplan, S.: Blood plasma pepsinogen. II. The activity of the plasma from normal subjects, patients with duodenal ulcer and patients with pernicious anemia. *J. Lab. & Clin. Med., 40:* 188, 1952.

(e) Mirsky, I. A.: *Psychoanalysis and the Biological Sciences.* Read at the Scientific Meetings of the Twentieth Anniversary of the Chicago Institute for Psychoanalysis, October 11, 1952.

46. Mittelmann, B., and Wolff, H. G.: Emotions and gastroduodenal function: experimental studies on patients with gastritis, duodenitis, and peptic ulcer. *Psychosom. Med., 4:* 5, 1942.
47. Mittelmann, B.: *Failures in Psychosomatic Case Treatments.* American Psychopathological Association, Proceedings, *Failures in Psychiatric Treatment, 37:* 106, 1948. New York: Grune and Stratton.
48. Moschowitz, E.: The psychogenic origin of organic disease. *N. Engl. J. Med., 212:* 605, 1935.
49. Palmer, E. D.: On the morphologic state of the gastric mucosa in the duodenal ulcer patient. *Gastroenterology, 18:* 8, 1951.
50. Robbins, B., and associates: An integrated psychotherapeutic program. *Psychotherapy, 1:* 89, 1955.
51. Rosenbaum, M.: Psychosomatic aspects of patients with peptic ulcer. In *Recent Developments in Psychosomatic Medicine.* Edited by Wittkower and Cleghorn. Philadelphia: J. B. Lippincott, 1954.
52. Sandweiss, D. J. (editor): *Peptic Ulcer.* Philadelphia: W. B. Saunders Co., 1951.
53. Sandweiss, D., and Saltzsein, H. C.: The relation of the sex hormones to peptic ulcer. *Am. J. Digestive Dis., 6:* 6, 1939.
54. Schiffrin, M. J., and Warren, A. A.: Some factors concerned in the production of experimental ulcerations of the gastrointestinal tract in cats. *Am. J. Digestive Dis., 9:* 205, 1942.
55. Shay, H., Gershon-Cohen, J., and Fels, S. S.: A self-regulating duodenal mechanism for gastric acid control and an explanation for pathologic gastric physiology in uncomplicated duodenal ulcer. *Am. J. Digestive Dis., 9:* 124, 1942.
56. Silbermann, I. S.: Experimentelle Magen-duodenal ulcus-erzeugung durch Sheinfuettern nach Pavlov. *Zentralbl. f. Chir., 54:* 2385, 1927.
57. Sperling, M.: Psychoanalytic study of ulcerative colitis in children. *Psychoanal. Quart., 15:* 302, 1946.
58. Sperling, M.: Psychosomatic techniques in psychosomatic medicine. In *Specialized Techniques in Psychotherapy.* New York: Basic Books, 1951.
59. Stewart, D. N., and Winsor, D. M. de R.: Incidence of perforated peptic ulcer: Effect of heavy air-raids. *Lancet, 242:* 259, 1942.
60. Stein, A., Steinhardt, R. W., and Cutler, S.: Group psychotherapy in patients with peptic ulcer. *Bull. N. Y. Acad. Med., 31:* 583, 1955.
61. Stine, L., and Ivy, A. C.: The effect of psychoanalysis on the course of peptic ulcer: a preliminary report. *Gastroenterology, 21:* 185, 1952.
62. Sullivan, A., and McKell, T.: *Personality in Peptic Ulcer.* Springfield, Illinois: C. C. Thomas, 1950.
63. Surkes, A. E.: Histamine contents of blood in patients with ulcers. *Praxis, 37:* 82, 1950.
64. Szasz, T., Levin, E., Kirsner, J., and Palmer, W.: The role of hostility in the pathogenesis of peptic ulcer; theoretical considerations with the report of a case. *Psychosom. Med., 9:* 331, 1947.
65. Varco, R. L., Code, C. F., Walpole, S. H., and Wangensteen, O. H.: Duodenal ulcer formation in the dog by intramuscular injections of a histamine-beeswax mixture. *Am. J. Physiol., 133:* 475, 1941.
66. Watts, J. W., and Fulton, J. F.: Intussusception: studies in intestinal motility. *N. Engl. J. Med., 210:* 883, 1934.
67. Winkelstein, A., Margolin, S. G., Kaufman, M. R., Hollander, F., Orringer, D., Janowitz, H., and Levy, M. H.: Psychophysiologic studies on a female patient with a larger gastric fistula. *Rev. Gastroenterology, 18:* 1507, 1951.
68. Winokur, G., and Guze, S.: A formulation of psychosomatic medicine. *M. Bull. St. Louis Univ., 4:* 130, 1950.
69. Wittkower, E.: Studies on the influence of emotions on the function of the organs. *J. Ment. Sc., 81:* 533, 1935.
70. Wolberg, L. R.: *The Technique of Psychotherapy.* New York: Grune and Stratton, 1954.
71. Wolf, S., and Wolff, H.: *Human Gastric Function.* London: Oxford University Press, 1943.

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PALLIDO-CEREBELLO-OLIVARY DEGENERATION WITH EUNUCHOIDISM

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This report is published for the unusual combination of clinical features, as well as for two kinds of pathological findings in one of the two cases. It is not only the twofold nature of the changes and their intensity, but also the fact that one of the two types of alterations (*pseudokalk*) has, to our knowledge, received considerable attention by German and Japanese authors, but very little by Anglo-Saxon workers (9).

Clinical Report

In a family of English extraction with four siblings, two sisters died, one at the age of 27 years (case 1), the other at 41 years. Of two brothers, the elder is living and reported healthy, whereas the younger (case 2) suffers from a grave neuroendocrine disorder (see figs. 1 and 6). The parents are physically normal; the father is described as a deviant personality, shiftless, unstable, stubborn, quarrelsome, and of violent temper. The mother is mentally inactive and reported to be of subnormal intelligence. One paternal brother died with a disorder which is described by relatives as similar to that of case 2. The oldest of the siblings, who is the elder of the sisters, died at the age of 41 years with a disease only vaguely reported as melancholic psychosis of several years' duration with hypertension of 212/132 mm. Hg.

Case 1: M. J., 27 years old at the time of her death, was the youngest of the four siblings. As a child, she was retarded physically and mentally; at the age of one year, she had frequent convulsions for which she was treated in a hospital. The convulsions disappeared later. She entered school at 8 years, progressed well in the first years but not later on, failed in grade 7, and discontinued her schooling at the age of 16. She was then employed irregularly as a domestic and in a factory, and also worked for 3 months as a waitress. She encountered difficulties in her jobs because of physical weakness and mental irritability.

Menstruation appeared only at the age of 24 years, two months after treatment with stilbestrol (0.5 mg., 2 times daily) had been initiated. At 22 years, her gait became staggering, "as if drunk"; she "could not keep anything in her hands." She deteriorated mentally and had sudden fits of anger. In her last years she steadily lost weight, in spite of great food intake.

Excerpt from the physical examination: Asthenic, markedly undernourished, looking very old, skin thin, scanty hair on head, very scanty in axillae; no hair on arms and legs. Teeth lacking. Limbs disproportionately long; external genitalia markedly underdeveloped. Respiratory and cardiovascular systems normal. B.P. 120/80 mm. Hg. BMR—11%, serum cholesterol 260 mg.%. Urine, negative. Reactions for syphilis, negative. Pupils equal with normal reaction. Strabism of right eye. No nystagmus. Eye ground normal.

Limbs: marked, symmetric hypotonia, gross ataxia. Involuntary movements of choreo-athetoid type which increase upon voluntary effort. Superficial and deep reflexes are present but diminished on both sides. Speech is mumbling.

X-rays of bones show slight but generalized decalcification. Ossification is not completed, the epiphyses of lower radii and ulnae and of femora not completely filled. Sella turcica normal.

I.Q. (Wechsler-Bellevue): 57. The physical and mental deterioration progressed, ataxia and involuntary movements increased, the deep reflexes decreased. The patient became emotionally more labile, then negativistic. Puerile "tantrums" occurred. Difficulty in swallowing and marked dysarthria followed. Six months before death and on the day of death there were seizures with loss of consciousness. Cause of death: bronchopneumonia.

Post mortem examination of pituitary gland, heart, pancreas, adrenal glands, ovaries, and oviducts by Dr. J. W. Adams revealed increase of acidophilic cells of the pituitary gland as well as tiny petechiae, the latter mainly in the posterior lobe. The ovaries showed follicular cysts.

The brain was fixed in formalin. The configuration was entirely normal. The spinal cord had not been removed. Blocks from cortex, thalamus, basal ganglia, amygdaloid nucleus, hippocampus, cerebellum, pons, and medulla obl., were embedded in paraffin or stained in bloc with Levaditi's silver nitrate method. Sections were stained with H. and E., iron-H. and E., Sudan IV, cresyl violet, periodic acid-Schiff, $AgNO_3$ (Kossa) for calcium, potassium ferrocyanide—HCl for iron.

The cortex, including the hippocampus, showed no microscopic changes; neither did the hypothalamus. In the upper thalami, next to the III. ventricle, perivascular areas of gliosis and fibrosis occurred (fig. 2). In the globus pallidus (fig. 3) and, to a lesser degree, in the anterior putamen were found numerous concrements which have been repeatedly described as *pseudokalk* in

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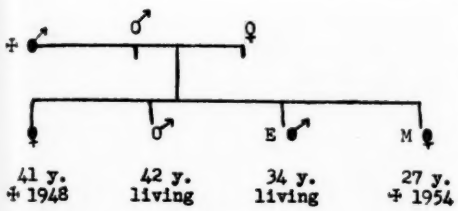

FIG. 1. Chart of cases

FIG. 2. Vessels with perivascular connective tissue cuffs in the thalamus. H. and E. stain. Magnification 68.

reports from Europe and Japan (Spatz (10), Ostertag (7), Altschul (1), Sandritter (8), and others). Such concrements occurred also in the gray substance which bridges the internal capsule (fig. 4), but not in the caudate nucleus proper.

The amount of concretions was excessive in the central parts of the pallidum and entirely obscured the histologic structure. The concretions were cocci-like along capillaries, free in the nervous tissue in the form of minute mulberries, and dust-like or plate-like in the media and, more rarely, in the adventitia of arterioles, of small arteries, and of some veins (fig. 5). The intima of numerous arterioles was thickened and their lumen narrow. The adventitia of arterioles showed an increased amount of connective tissue with advanced hyalinosis. A staining with $AgNO_3$ for calcium, followed by a hematoxylin stain, showed distinctly that only some *pseudokalk* formations were calcified, whereas others were not, or only partly. The same applied to the iron reaction. In addition to the partial calcium and iron reaction and to the characteristic staining with hematoxylin, it is noteworthy that all of the *pseudokalk* was stained by the periodic acid-Schiff method. *Pseudokalk* was further found in the media of arterioles and arteries of the cerebellum, but not in its parenchyma. There was no special relation between these vessels and the dentate nucleus, although in the dentate nucleus proper *pseudokalk* had been observed by other authors. The white substance of the cerebellum showed foci with severe rarefication of myelinated fibers (spongiosis) without secondary gliosis. Gravely affected were the Purkinje cells; they were often lacking over great distances or they were crowded together; some were displaced into the molecular layer. Many axons and dendrites of Purkinje cells showed balloon-like homogeneous or frothy swellings similar to those described in amaurotic idiocy, but without lipoid content. The

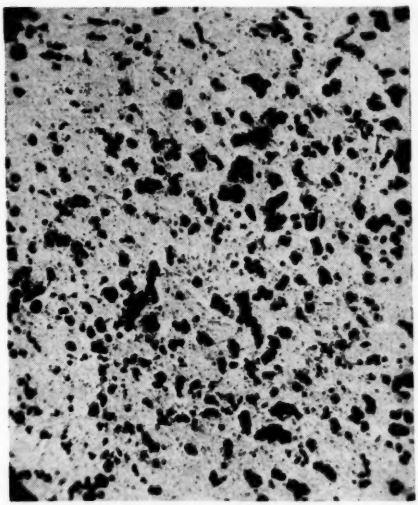

FIG. 3. *Pseudokalk* in globus pallidus. Periodic acid-Schiff stain. Magnification 57.

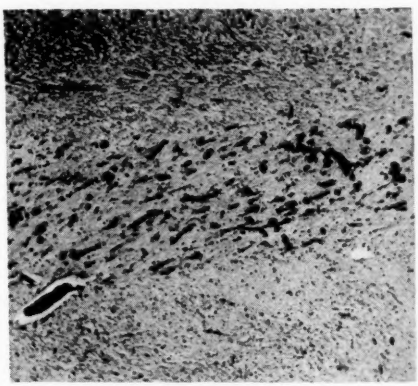

FIG. 4. *Pseudokalk* in gray substance crossing internal capsule. Periodic acid-Schiff stain. Magnification 55.

alteration of Purkinje cells showed no distinct preference for the lobes of the cerebellar hemispheres or vermis.

The inferior olives and their accessory olives showed distinct outlines, but there were only scanty shrunken nerve cells. The pattern of neuroglia appeared normal.

Case 2: (fig. 6). E. J., 34 years of age at time of recent examination (1955), had slow onset of mental deterioration. He attended school until 16th year. He never was able to work and stayed at home until his 30th year, doing chores around the house. Hospitalized in 1948 for the first time. One reason for his hospitalization is given as a "temper-tantrum". Certifying physicians noted his slurring speech and "stupid appearance".

Physical examination: Height 71″, sitting height 34″, length of legs 38″, spread of arms, finger tip to finger tip, 76″. Very lean. Weight: 100 lbs. Absence of beard, axillary and pubic hair. He never shaved. External genitalia markedly underdeveloped. Blood pressure 135/85 mm. Hg. Pupils even, react somewhat slowly. High degree of myopia. No nystagmus. Corneal reflexes present. Reflexes on upper limbs are difficult to elicit, owing to marked arthritic swellings in elbows, and to hyperesthesia. Tongue symmetric, "restless"; the patient is unable to keep it still. Speech slurred. No clonus of uvule. Knee jerk and Achilles reflexes exaggerated. No patellar or ankle clonus. No Babinski.

Abdominal muscles spastic (for which reason abd. reflexes impossible to elicit). Marked hypotonia of lower limbs. The patient can readily put either of the lower limbs behind his neck. Dysmetria (finger tip—nose; heel—knee) marked, more of lower than upper limbs. Gait, if unsupported, not possible; with support from each side, typical cerebellar ("drunken") gait. General hyperesthesia.

FIG. 6. E. J. in December, 1954

FIG. 5. Vein in outer portion of globus pallidus. H. and E. stain. Magnification 147.

It is difficult to establish whether there are involuntary movements because of the mental state and the cerebellar ataxia; sometimes one is inclined to term some movements choreatic; at other times, similar movements appear to be voluntary, but distorted by the pronounced cerebellar ataxia. Some grimacing, however, resembles greatly that seen in patients with athetosis. X-rays of skull show moderate enlargement of the sella turcica. I.Q. (Wechsler-Bellevue): 73 in 1948; 45–55 in 1954. Mental age in 1954 about 5–6 years.

DISCUSSION

In the two siblings, M. J. and E. J., we are dealing apparently with the same syndrome, namely, a cerebellar ataxia with eunuchism and mental deterioration. Moreover, the cerebellar ataxia obscures to a greater or lesser degree choreatic and athetoid movements.

From the histological findings in the cerebellum and medulla oblongata of M. J., it seems warranted to make the diagnosis of cerebello-olivary degeneration. It is true that

the clinical course and the histological picture do not entirely fit the cerebello-olivary degeneration described by Holmes, but, in the large group of cerebellar atrophies, there are numerous variations, including degeneration of the inferior olives or of the pontine structures and inferior olives, of the basal ganglia or cortical areas.

Recently, Critchley and Greenfield (3) and Greenfield (4) have published monographic discussions on the subject of cerebellar atrophy, and we wish to refer to these publications for details. On the other hand, we would like to elaborate on the occurrence of *pseudokalk* in the brain of M. J.

Pseudokalk has often been, and still is being, mistaken for calcification. It was Spatz (10) who coined the expression *pseudokalk*. (In German *Kalk* means naturally occurring calcium carbonate or mixtures of various calcium salts; the closest English translation of the German *Kalk* is "limestone".) Altschul (1) termed this expression a "Verlegenheitsbezeichnung", a non-committal or provisional expression, so to speak, and Bochnik (2) agreed with this because it says only that the substance in question is not *Kalk*. The term *pseudokalk* may, however, be interpreted as meaning that there are some features which could, wrongly, induce the impression or opinion that the substance consists of calcium salts. The main common feature is the affinity for hematoxylin and, to a lesser degree, the microscopical resemblance between *pseudokalk* and calcified tissue, especially Where *pseudkalk* occupies the arterial media. The fact that *pseudokalk* may, secondarily, be impregnated with calcium salts or, for that matter, with iron salts, should have no bearing on the term. Bochnik has suggested that the term *pseudokalk* should be replaced by *neurogel*. Whether this is an improvement is more than questionable.

As to the nature of this enigmatic substance: Sandritter (8) believes that the matrix of *pseudokalk* exudes from the vessels and by contact with tissue fluids, precipitates. He considers disturbances of circulation and anoxemia as causative factors.

Pseudokalk has specific locations: its foremost predilection is for the globus pallidus and putamen, then for the hippocampus, and next for the dentate nucleus. According to Sandritter, it may be found also in the fourth layer of the area striata of the cerebral cortex.

Pseudokalk is found relatively often in the brain in advanced age, without relation to specific diseases, although it is possible that chronic diseases promote its formation. Sandritter has described its occurrence also in the brain of feti, newborns, infants, and adolescents. The same author reports that *pseudokalk* is found in the brains of monkeys and horses, but not in the brains of rodents. Its relation to the various tissue components differs; it occurs free in the tissue, incrustates nerve cells, accompanies capillaries as "dusting", forms in the media of arteries and veins, or in the arterial adventitia. It stains darkly with hematoxylin and, in later stages, gives positive calcium and iron reactions. Recently-formed *pseudokalk* stains well with the Nissl stain, but later on it does not take the stain (2).

Our observation that *pseudokalk* stains strongly with the periodic acid-Schiff method should guide further histochemical investigations. This reaction is especially interesting because, according to Kasuga (5, 6), simple glycogen methods are negative.

In case 1, there was the typical location in the globus pallidus, but it also was found in the putamen; it was missing in the caudate nucleus and in the hippocampus. In the cerebellum it did not occur at its predilection site, the dentate nucleus, but was found in the media of vessels of the white substance.

The amount of *pseudokalk* in the globus pallidus was in some parts so excessive that it masked the cellular structure; most likely it interfered with the proper function of this area. However, it may well be that the *pseudokalk* deposits are merely a secondary feature, a precipitation into a previously severely damaged area.

Summary

The combination of cerebellar ataxia with choreo-athetosis and eunuchism is reported in two siblings.

The pathological findings in one of the cases are severe atrophic and dystrophic features in the cerebellum and inferior olives; numeric

increase of acidophilic cells in the anterior lobe of the pituitary; extensive deposition of *pseudokalk* in the globus pallidus and putamen and in the blood vessels of the cerebellar white substance. Some of the *pseudokalk* concrements are in the process of calcium and iron incrustation. The nature of *pseudokalk* is discussed.

BIBLIOGRAPHY

1. Altschul, R.: Pseudokalkbildungen in der Wand von Hirngefässen. *Virchows Arch. path. Anat., 298:* 401–405, 1936.
2. Bochnik, H. J.: Morphologische Studien über "Pseudokalk" (Neurogel). *Arch. Psychiat. Ztschr. Neur., 184:* 201–225, 1950.
3. Critchley, M., and Greenfield, J. G.: Olivo-ponto-cerebellar atrophy. *Brain, 71:* 343–364, 1948.
4. Greenfield, J. G.: *The Spino-Cerebellar Degenerations.* Oxford: Blackwell Scientific Publications, 1954.
5. Kasuga, Y.: Studien über den Pseudokalk im Zwischenhirn. *Fukuoka acta medica, 32:* 110–113, 1939.
6. Kasuga, Y.: Über die Ablagerungsstellen des Pseudokalks im Zwischenhirn, insbesondere an der Gefässwand. *Fukuoka acta medica* (abstract section), *33:* 21, 1940.
7. Ostertag, B.: Die an bestimmte Lokalisation gebundenen Konkremente des Zentralnervensystems. *Virchows Arch. path. Anat., 275:* 595–615, 1930.
8. Sandritter, W.: Über das Vorkommen von Pseudokalk in Gehirnen von Feten, Säuglingen, Kleinkindern und Jugendlichen. *Deut. Zeitschr. Nervenh., 166:* 481–498, 1951.
9. Slager, U. T.: Intracerebral vascular deposits in the basal ganglia. *J. Nerv. & Ment. Dis., 121:* 410–419, 1955.
10. Spatz, H.: Über den Eisennachweis im Gehirn. *Zeitschr. f. d. ges. Neurol. u. Psychiat., 77:* 261–390, 1922.

BRAIN-INJURY AT BIRTH (CEREBRAL PALSY) AND PERCEPTUAL RESPONSES DURING CHILDHOOD AND ADOLESCENCE

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This study evaluates performance with the Rorschach test of sixty-four children of average intelligence. Thirty-two had been given the diagnosis of "cerebral palsy" (because of apparent injury to the brain at birth). Thirty-two additional subjects composed a control group; these control children had not been brain-injured so far as we could tell.

The uninjured control subjects were matched singly with the brain-injured for age, sex and mental ability as measured previously by individual and group mental tests and also, for the purpose of this study, by three subtests of the Wechsler Intelligence Scale for children (WISC): Information, Comprehension and Vocabulary. In addition, it was required that the control children perform as well with Block Designs as with the three Verbal WISC subtests.

Special features of selection were that 1) all 64 children, including the brain-injured, had to be capable of intelligible speech; 2) all children were required to perform at the level of I.Q. 60 or better; 3) the brain-injured children were members of a group undergoing intensive study by the Cerebral Palsy Center in New Orleans. These selective factors served to restrict a random sampling of children who sustain brain-injury at birth; *we are dealing here with the brighter and more verbal of "cerebral palsy" children.*

Gross somatic symptomatology of the 32 brain-injured children was as follows:

	Athetoid	*Spastic*
Hemiplegic	0	5
Paraplegic	1	1
Quadraplegic	12	10
Non-plegic	2	1

Eight of the 32 brain-injured had a history of convulsive phenomena; six of these were quadraplegic; four behaved in athetoid fashion; four spastic.

The control children all attended public or parochial schools in Biloxi, Mississippi. They represented a socioeconomic and cultural milieu very similar to that of the brain-injured children, except that the latter lived in or near a large city, that is, New Orleans.

TABLE 1.—CHARACTERISTICS OF BRAIN-INJURED AND CONTROL SUBJECTS

	Brain-Injured	Control
Number of cases	32	32
Age (years)		
Mean	11.39	11.45
Median	9.67	10.50
Sigma	5.01	5.07
I.Q. (WISC, 3-Verbal)		
Mean	96.97	97.56
Median	98.42	97.00
Sigma	15.24	13.59
I.Q. (WISC, Block Design)		
Mean	—	102.63
Median	—	103.50
Sigma	—	17.29

Table 1 shows how well the two groups were matched for age in I.Q.; it shows also that the control group was as competent with Block Designs as with the Verbal tests of the WISC.

RESULTS

The brain-injured group was less productive, giving 14–15 responses in contrast to 20–21 for the controls (t = 3.14). The brain-injured group gave a significantly greater *percentage* of whole responses than the controls (t = 2.81), but in absolute *numbers* of whole responses, the difference was insignificant (4.6 for the controls and 5.5 for the brain-injured).

Quality of responses. Using the scoring scheme of Wyatt (1) and his group, the brain-injured children used significantly more often whole responses that were *amorphous*, *vague* and *minus* than did the controls; the controls used wholes that were *mediocre*, W + and W++.

The controls excelled the brain-injured somewhat in the quality of form (F + %) (t = 1.55); the brain-injured excelled the

TABLE 2.—Frequencies of Responses for the Brain-Injured and Control Groups Classified According to Rorschach Determinants

	Brain-Injured	Control
Human movement (M)	11	25
Animal movement (FM)	39	24
Inanimate movement (m)	6	26
Third dimension (k)	3	4
Diffusion (K)	6	13
Vista (FK)	3	7
Form only (F)	321	462
Form texture (Fc)	11	7
Texture (c)	0	2
Achromatic color (C′)	19	17
Form-color (FC)	31	26
Color-form (CF)	22	29
Color only (C)	4	9
R	476	651

controls in the number of original responses (t = 3.34); most of these were originals of poor form quality.

Content of responses. In *variety* of content, that is, number of categories used, the controls excelled the brain-injured (t = 2.12). The brain-injured children tended to achieve a higher score for perseveration or consistency of content (t = 1.55). There was a noticeable tendency for the controls to use more *human* content (t = 1.79), and for the relation between *whole* human figures to *parts* of humans to be, for the brain-injured, 1:1, while it was almost 2:1 for the controls.

There was a tendency also for the brain-injured children *not* to use anatomy responses; of the control children, 13 (41%) gave anatomy responses. Of the brain-injured only six (21%) gave such responses. This difference yielded a t of 1.77.

Rejection of figures. The numbers of subjects rejecting figures were about equal, nine brain-injured (28%) and seven controls (22%). However, there was a tendency for the brain-injured in greater abundance (22%) to reject figure VI than did the controls (6%); the t here is 1.82. This rejection of figure VI appeared about equally at all age levels: in the youngest group at 22%, the middle group at 27%, and the adolescent group at 17%.

Determinants. Table 2 presents the incidence of various Rorschach determinants for the total groups of brain-injured and control children. Frequencies are plotted in figure 1 as percentage of the total R (651) of the control group.

Differences between the groups (determined on the basis of Chi square for incidence of a particular determinant) are negligible for all determinants except *movement.*

Regarding movement responses, the groups are similar in the number in each group using movement of any sort—human, animal, and inanimate. Of the 32 children in each group, 22 brain-injured (69%) and 23 controls (72%) use movement. There is, however, a marked difference between the groups in the *kind* of movement used; the controls use human (M), animal (FM) and inanimate (m) movement about equally, while the brain-injured use *more animal movement* (t = 1.02) and *less human movement* (t = 1.65) and particularly less *inanimate movement* (t = 2.62).

Because of the difference found between the brain-injured and control groups for movement responses, it seemed important to determine whether or not chronological age was a factor. As shown in table 1, the subjects used in this study ranged in age from four years, seven months to nineteen years, eleven months. They fell into three age groups, as follows:

Group	*Age Range*	*Mean Age*	*Number in Group*
Youngest	4-7 through 6-11	5-9.2	9 and 9
Middle	8-2 through 11-6	9-5.7	11 and 11
Adolescent	13-5 through 19-11	17-6.2	12 and 12

Frequencies of the three types of movement responses for each of the three subgroups classified for chronological age are shown in table 3. An analysis of the significance of differences between groups showed that the controls' greater use of *human* movement was almost wholly an adolescent phenomenon (t = 1.67). The brain-injured children's greater use of *animal* movement was found to be shown almost wholly by the youngest children (t = 1.79). The greater use of inanimate movement by the control subjects was shown at all age levels, and for the total

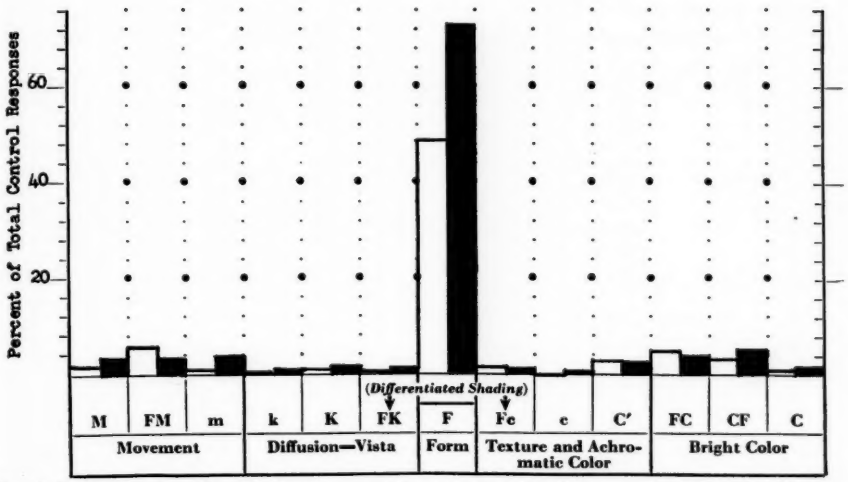

FIG. 1. Determinants of Rorschach responses of brain-injured (clear) to control subjects (black) plotted as proportion of the total number of responses (N-651) given by control subjects.

TABLE 3.—TYPES OF MOVEMENT RESPONSES GIVEN BY BRAIN-INJURED AND CONTROL CHILDREN AT THREE AGE LEVELS

	Youngest		Middle		Adolescent	
	B-I	Control	B-I	Control	B-I	Control
Human movement	3	2	4	5	4	18
Animal movement	18	4	7	9	14	11
Inanimate movement	0	6	0	7	6	13

group comparisons is a quite significant difference (2 = 2.48).

Because of the rather marked differences between brain-injured and control children in their perception of various sorts of movement responses, it may be well to examine these in detail. In the data following, human animal and inanimate movement responses of each subject are given; following the case number, designated as Male (M) or Female (F), is given the chronological age in years, hyphen, months.

Human Movement Responses

Figure I

Brain-Injured	*Control*
———	(28M, 18-5) Could be a person in costume with wings on it and hands sticking up in the air.

Figure II

Brain-Injured	*Control*
(30M, 18-4) That looks like two Santa Clauses (they might be shaking hands).	(22F, 13-5) Looks like maybe two people dressed up in costumes doing a dance or something, masks on. Either natives at Mardi Gras or something like that.
	(31M, 18-3) These look like two people playing that game where you pat your hands,—they're kneeling down.
	(28M, 18-5) Could also look like two men fighting.
	Looks like two people doing a square dance.

Figure III

(20F, 11-5) Looks like ghosts (making something). And these look like witches or something (flying around).	(2M, 4-8) That looks like two men (holding two trees).
	(10F, 8-2) Two mens (each got a spoon and is mixing all the stuff in a bowl).
(22F, 13-5) Well, I think this looks like two kinds of old-looking men, something like you see, two funny looking characters (could be picking up a basket of some sort).	(12M, 8-9) Looks like an old man and an old lady sitting down.
	(22F, 13-5) Looks like either people beating drums or making some sort of basket or something.
	(26F, 17-3) Reminds me of two natives doing

Human Movement Responses (cont'd)

Figure III (cont'd)

Brain-Injured	*Control*
	one of their ritual dances over an altar with a fire coming out of it.
	(29M, 18-0) Outline of two figures, persons with baskets, or something in their hands (people meeting, bowing to each other).
	(31M, 18-3) Looks like two people here doing something with their hands.
	(28M, 18-5) Looks like two basketball players players dribbling the ball. Could be two people greeting each other from a trip or departing.
	(34M, 19-7) Two people trying to raise something, or fighting over something; two men trying to raise something and they couldn't do it.
	(33F, 19-7) These two make me think of somebody doing the jitterbug or something.

Figure IV

(20F, 11-5) A giant,—a big giant, must be sitting on a stool, or on a tree (Goofy looking giant).	(1M, 4-7) That looks like a giant, getting a tree down (W).

Figure V

(6F, 6-2) Looks like a girl dancing. Two men swinging around on a girl.	
(28M, 18-3) Certain parts of it—human relaxing in a chair (a person reclining).	

Figure VII

(29M, 18-3) This piece looks like it could be two men or two soldiers or something holding up a flag or pole (see their arms going out holding the poles).	(10F, 8-2) Two little boys (talking together).
	(12M, 8-9) Two girls jumping up and down, playing hopscotch.
	(22F, 13-5) This looks like two figures doing a dance. They've got their hair pulled back and long hair.

Figure VIII

Brain-Injured	*Control*
———	———

Figure IX

(9M, 6-11) Two little ladies with two little hands holding on to two little sticks.	(16M, 9-6) Looks like two old witches sitting on a green bush.
(20F, 11-5) Looks like the witches from Hansel and Gretel, making some kind of magic stuff.	(23F, 18-5) A girl and her mother running.
	(28M, 18-5) Looks like a person drinking something.

Figure X

———	(28M, 18-5) Looks like something trying to climb a tree.
	(34M, 19-7) Some sort of a parade walking through the streets with people lined up on both sides, and floats going down the middle.

To serve as a summary of the kinds of human movement used by brain-injured and control children, the following data are presented:

Type of Movement	*Number of Responses*	
	Brain-Injured	*Control*
1. Dancing	1*	5
2. Playing (hopscotch, patty-cake, basketball)	0	3
6. Parading	0	1
3. Meeting (bowing, shaking hands, greeting)	1	2
7. Talking together	0	1
8. Beating drums	0	1
4. Fighting	0	2
9. Running (girl and mother)	0	1
17. Flying around	1	0
18. Swinging around a girl	1	0
10. Trying to climb a tree	0	1
11. Getting a tree down	0	1
12. Drinking something	0	1
13. Making (or mixing) something	2	1
19. Picking up something	1	0
14. Holding something	2	1
15. Doing something with their hands	0	1
16. Hand sticking up	0	1
5. Sitting down	1	2
20. Relaxing, reclining	1	0

* Alone.

Animal Movement Responses

Figure I

Brain-Injured	*Control*
(6F, 6-2) Looks like a bird, flying on a rock.	———

Figure II

(6F, 6-2) Looks like two dogs fighting (holding their hands up).	———
(22F, 13-5) Well, it sorta looks like two bears clapping hands (in story books you see little bears jumping around and playing).	
(25M, 17-2) Looks like two bears . . . . Kinda looks like they are dancing.	

Figure III

(4M, 5-4) Looks like a fish or alligator (he's alive).	———
(5F, 5-6) I'll tell you what this looks like,—butterfly (he looks like he's alive, he's flying).	
(6F, 6-2) Looks like reindeers picking up a pot.	
(12M, 8-9) That looks like a butterfly (he's flying).	
(17F, 10-2) A butterfly—(he's flying).	
(30M, 18-4) Looks like a bird (standing on a branch of a tree).	
(32M, 18-7) Looks like two birds sitting on a limb.	

Figure IV

(1M, 4-9) A duck—(he's alive, he's walking).	———
(25M, 17-2) Looks like some kind of worm or something (that could be some kind of way he walks or moves).	

Figure V

(30M, 18-4) Looks like a rabbit—three rabbits—(standing up on hind legs . . . looks like they're jumping).	(23F, 18-5) maybe a rabbit jumping.
(34M, 19-11) Looks like a turkey (with wings flapping).	

Figure VI

Brain-Injured	*Control*
(6F, 6-2) Two fishes floating, swimming.	(1M, 4-7) Looks like a butterfly (they're flying) (W).
(30M, 18-4) That looks like a squirrel (looks like he's standing on branch of tree).	Looks like a flying snake (D3).
	(8F, 6-7) A bumble-bee—looks like its carrying a train (D3 carrying D1).
	(28M, 18-5) Part down here looks like something running—some animals.

Figure VII

(22F, 13-5) Well, it looks like two little rabbits with little skirts on—looks like dancing (standing on hind legs, would be hopping around).	(13♀, 8-10) It is shaped something like a frog (looks like its hopping, but no head).
(2M, 4-11) Butterflies, looks like three of 'em (ones on top, they're flying—one on bottom standing still).	(31M, 18-3) Looks like two animals, back to back, with paws out from chest and with their heads turned, looking at each other, looks like donkeys with long ears.
	(30M, 18-5) This part here looks like upper half of a dog sitting up,—something in his mouth.

Figure VIII

(2M, 4-11) Two rabbits (they're climbing).	(1M, 4-7) These look like two rats—tearing something to eat.
(5F, 5-6) I know what this is . . . it's got this . . . it's got legs . . . some kind of animal . . . I don't know (He's alive, he's walking, he's climbing).	(8F, 6-7) Two little red pigs crawling on a tree.
	(16M, 9-6) Two bears or two lions on each side (climbing).
(6F, 6-2) Looks like two birds . . . . They are climbing up.	(19F, 11-4) These look like germs—(they're crawling around).
(12M, 8-9) This looks like some kind of animal (walking, jumping over the rocks).	(23F, 18-5) An animal going from one rock to another.
(17F, 10-2) Two bears (they're climbing a tree).	
(20F, 11-5) Two bugs on a . . . I don't know what they'd be walking on.	
(22F, 13-5) Well, this looks like a panther (could be rocks that he was climbing over).	
(30M, 18-4) And a frog (looks like he's hopping).	

Animal Movement Responses (cont'd)

Figure VIII (cont'd)

Brain-Injured	*Control*
That looks like two racoons (they're climbing up a tree).	

Figure IX

(1M, 4-9) (Tiny detail in pink) One of those things that fly in the sky.	(25M, 17-8) Kind of looks like an animal crawling up something, —the way it is right here . . . .
(2M, 4-11) One more butterfly (he's flying).	
(30M, 18-4) Looks like a frog (he might be jumping).	

Figure X

(3F, 5-0) Little babies (crabs—pulling something up).	(12M, 8-9) Looks like a bunny looking through some weeds.
(6F, 6-2) Animals having a party.	Looks like dogs barking.
Looks like a bunch of animals flying around.	This looks like a tree with birds on it (trying to get out of nest of weeds) and nests.
(14F, 8-10) That looks like a turtle (it crawls).	(16M, 9-6) Two little collies (sitting).
(18N, 10-3) Two animals climbing up.	(19F, 11-4) These look like germs crawling all around it (the throat seen before).
(20F, 11-5) Germs, all just crawling around.	(20F, 11-6) Two sort of birds, with their heads together.
(29M, 18-3) These two yellow things look like they could be some kind of animal sitting down on back legs, rearing up.	(31M, 18-3) They might be caterpillars but standing up on one end looking at the rabbit.
	(23F, 18-5) An animal climbing up a hill. Two animals holding something over a mountain.
	(28M, 18-5) Looks like two chickens with their heads together.
	Some kind of bird coming down this mountain.
	(33F, 19-7) Yellow and brown ones look like something is eating another (like animals who live in water).

Inanimate Movement Responses

Figure I

Brain-Injured	*Control*
———	(33F, 19-7) This whole thing would remind me of something in its unborn stage, taking form, because I've been taking biology.

Figure II

(29M, 18-3) That looks like the front of a cat's mouth (kinda puffed up, kinda . . .) opened up . . . puffed up—(inflated).	(8F, 6-7) A bullet going up.
	(10F, 8-2) Fire (how that stuff comes out (D2) and the color).
	(24F, 16-3) Looks like some kind of explosion.

Figure III

(30M, 18-4) And a monkey (looks like hanging by tail).	(31M, 18-3) Looks like something falling out of a tree—a monkey.
	(23F, 18-5) Animals hanging from trees.
	(28M, 18-5) Looks like two animals on top (hanging by tail).

Figure IV

———	(4M, 5-6) Skeleton . . . sitting on a chair.
	(12M, 8-9) This looks like a frog, a baby just beginning to turn into a big frog.
	(20F, 11-6) Looks like a film teacher showed about caves with these things hanging all around them.

Figure V

——— ———

Figure VI

———

Figure VII

(24F, 16-2) Could be land with a river down in between (center white as "water flowing through narrow passage" in center of bottom figure).	(16M, 9-6) Two girls on each side, with no heads, with their backs facing each other (skirts flying out, moving—wind must be blowing).
	(29M, 18-0) The entire picture looks like water falling, down here, and ridges up here (where it foams).
	(23F, 18-5) Rocking horse (rabbits rocking on ends of it).

Inanimate Movement Responses (con't)

Figure VII (Cont'd)

Brain-Injured	*Control*
	(28M, 18-5) Could also be a building setting toward back with smoke coming out.

Figure VIII

	(9M, 6-10) Looks like rain going down (Dd 30).

Figure IX

(29M, 18-3) This part here looks like it could be an eruption of some kind—this part blowing up—oil well blowing up, except oil is not red (looks like it's rolling).	(9M, 6-10) Looks more like thunder again. That looks like rain (rain comes down—(D5).
(31M, 18-5) Two trees with a geyser shooting up between them.	(12M, 8-9) Looks like a bomb,—it hit (bomb hit and comes up in clouds).
(33F, 19-8) A flame (goes up like a flame).	(29M, 18-0) The way this goes up and spreads out, looks like an explosion of an A bomb.
	(32M, 18-7) This sort of looks like a candle burning.

Figure X

	(8F, 6-7) Two men (D8) falling off it (D11).
	(16M, 9-6) Evergreen trees bent over. Two edges of a cliff, with roots of a tree hanging between them.
	(28M, 18-5) Looks like two airplanes letting out a smoke screen. Looks like two balls tied together and hung on something. Looks like head with smoke coming out of eyes.

The Piotrowski "Signs" of Brain-Damage

In 1937 Piotrowski (2) discussed 10 characteristics of the Rorschach performance that seemed to be demonstrated by adults with known brain-damage as compared with control subjects. Four of these characteristics as they apply to the subjects studied in this report have been discussed previously. These are tendencies for the brain-injured to be less productive, to use less human movement, and to have a poor form quality. Specifically, in this connection, Piotrowski indicates certain cut-off points for these three phenomena; values for the subjects here studied for these are as follows:

	Per Cent *Brain-Injured*	*Controls*	*t*
Number of responses less than 15	56	22	2.96
Human movement one response or less	94	75	2.16
Good form less than 70%	50	28	1.87

The subjects here studied showed no significant difference for four of the Piotrowski signs; per cent of popular responses, time per response, perplexity and repetition.

Of the remaining three signs, the brain-injured in this study differed from the controls as follows:

	Per Cent *Brain-Injured*	*Controls*	*t*
Color naming	25	9	1.74
Impotence	50	16	3.12
Automatic phrases	41	12	2.79

An analysis of the total number of Piotrowski signs showed that five or more were given by 52 per cent of the brain-injured group, and by 27 per cent of the control group. The t value for this difference is 2.14.

Global Evaluation of Rorschach Performance

In an effort to determine whether or not the total performance with the Rorschach test gives a valid impression of "cerebral palsy" as a unique experience or aspect of the personality, the 64 records were evaluated in the following way:

Each record was disguised as to name and any other identification with the brain-injured or control group. The records were divided according to age group, in such a way that there were 9 + 9 or 18 records of the youngest children, thoroughly mixed. There were 11 + 11 or 22 records of the middle group, and 12 + 12 or 24 of the adolescent group.

The senior author then attempted to identify each record as that of a "cerebral palsy" child or a control child, within his or her group of 18, 22 or 24.

Results of this qualitative study were as follows:

		Identified	
		Correctly	*Incorrectly*
Youngest group (4-7 through 6-11)	Brain-injured	6	3
	Control	6	3
Middle group (8-2 through 11-6)	Brain-injured	7	4
	Control	7	4
Adolescent group (13-5 through 19-11	Brain-injured	6	6
	Control	6	6

The results of this evaluation show that it was possible to recognize the record of a younger child as that of a "cerebral palsy" child with a fair degree of accuracy; this was true but in somewhat lesser degree for the middle group of pre-adolescent children. It was impossible, simply by appraising the record as a whole, to identify an adolescent protocol as that of a brain-injured person.

An analysis of the nature of diagnostic errors in this "blind" classification of records revealed a consistent tendency for the clinician to mistake a bright brain-injured child and to classify him as belonging to the control group. Likewise, control children who were dull were often placed in the brain-injured group.

The following tabulation gives the mean I.Q. of children in each group judged accurately and inaccurately:

	Mean I.Q.	
	Brain-Injured	*Control*
Judged accurately....	95.3 ± 3.4	100.8 ± 3.5
Judged inaccurately...	101.3 ± 5.3	93.3 ± 3.2

Summary of Findings

On the basis of this study of 64 children, half of whom were brain-injured at or near birth, the following conclusions seem justified:

1) Brain-injured children in the Rorschach situation were less productive, quantitatively and qualitatively. This was shown in (a) Their fewer responses, fewer content categories. (b) Their poorer form, poorer quality whole responses, more frequent original responses of poor quality. (c) Their greater rejection of figures (particularly of Figure VI).

2) Brain-injured children behaved with greater caution and less spontaneity. (a) They used *parts* of humans and animals as much as *whole* humans or animals. (b) Their movement responses were less frequently overt and spontaneous; they tended to be of a gesturing or posture type. They used animal movement in greater abundance, but here also the movement itself was constricted.

3) Brain-injured children showed more of the Piotrowski "Signs" than did the control children; differences were most marked in lesser productivity and movement, color naming, repetitious phraseology, and inability to improve responses.

4) When the Rorschach records were disguised as to subject, it was possible to identify the brain-injured more accurately among the younger children than among the older. Mistakes in this "blind" identification were due, in part at least, to a consistent tendency to consider dull control children as brain-injured, and bright brain-injured children as normal.

BIBLIOGRAPHY

1. Wyatt, F.: Symposium: Perceptual structure in pathology and development. *J. Proj. Tech., 17:* 144–199, 1953.
2. Piotrowski, Z. A.: The Rorschach ink-blot method in organic disturbances of the central nervous system. *J. Nerv. & Ment. Dis., 86:* 525–537, 1937.

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CLINICAL OBSERVATIONS ON THE SOMNIFACIENT EFFICACY OF HEPTABARBITAL (MEDOMIN®) IN MENTALLY DISTURBED PATIENTS

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Heptabarbital (Medomin®)[2] is a short-acting comparatively non-toxic (1, 3, 5, 6) member of the barbiturate family which has enjoyed extensive use in Europe in the past decade but which has been introduced into the United States only within the past few years. Investigators have been, for the most part, unanimous in commenting on the absence of barbiturate hangover when employed in ordinary doses (100–400 mg. p.o.) (2, 3, 4, 7, 9, 10). Other work has confirmed these observations but with doses up to 1,000 mg.; in this same study Medomin was administered in single doses up to 2,400 mg. without producing any serious side effects or toxicity (3).

Medomin differs from most barbiturates in that the molecular structure attached to the malonourea nucleus is cyclic and is singular in that this is a seven carbon ring. The compound is rapidly metabolized *in vivo* to a keto compound which has no sedative-hypnotic properties; this presumably accounts for the short duration of action. This latter product is then broken down into compounds of low molecular weight which are excreted in the urine; these, however, cannot be identified as breakdown products of Medomin because they are metabolites normally found in urine. Only a very small amount of the keto compound can be isolated from the urine; no unchanged Medomin is ever found (7).

Because of the short duration of action and the relative mild potency, Medomin is usually employed as a soporific or sedative for the milder degrees of insomnia or anxiety.

However, because of the wide therapeutic range which can be employed without anticipating serious reactions (100–2,400 mg.), the following study was undertaken to determine what sedative-hypnotic effect, if any, could be obtained in mentally disturbed patients requiring nocturnal sedation and to compare these effects with a group of the more commonly used somnifacients.

METHOD

The clinical evaluation of the soporific property of an agent in humans is difficult at best because of the many variables involved which cannot be exactly defined or controlled. Sleep patterns vary widely among different individuals and often in the same person, particularly the mentally disturbed. It is not uncommon to observe patients who are markedly disturbed having many sleepless nights which are punctuated here and there at unpredictable times by nights of relatively good rest without sedation. Furthermore, the ability to sleep frequently improves spontaneously after the relative security of hospitalization and appropriate psychiatric management lessen the fears and agitation of the patient. Because of these variations it is most difficult to compare objectively the sedative-hypnotic effects of an agent among members of a group of patients or with other agents in the same group. Attempting to use controls under these circumstances in the face of these variables may also be fallacious. In an effort to standardize the observations to follow as much as possible in the face of the obstacles, the classification of the patients into two categories of severe and mild to moderate degrees of sleep disturbance was done by one physician (C. K.). This same physician also evaluated the need for and prescribed sedatives on an individual nightly basis having at all times a knowledge of the patient's recent behavior and status at time of evaluation.

The subjects of this report comprised 49 in-patients of the Grasslands Hospital Psychiatric Institute, Valhalla, New York. Generally, this is a receiving center where patients seldom remain more than 10 days, during which time diagnosis is established and arrangements are made for the various types of disposition.

[1] Medical Department and Psychiatric Institute, respectively, Grasslands Hospital, Valhalla, New York.

[2] Brand of heptabarbital, supplied in 200 mg. oral tablets by Geigy Pharmaceuticals, Division of Geigy Chemical Corporation' New York, N. Y.

TABLE 1.—HETEROGENEOUS GROUP OF SEDATIVE-HYPNOTICS

Barbital, p.o., 300–600 mg.
Paraldehyde, p.o. or i.m., 8–20 cc.
Pentobarbital sodium, p.o., 100–400 mg.
Morphine and scopolamine, subcut., 10–16, 0.3–0.4 mg.
Amytal sodium, i.m., 250 mg.
Phenobarbital sodium, i.m., 200–400 mg.
Chloral hydrate, p.o., 600–1,600 mg.
Seconal p.o., 100–400 mg.

Sleep achieved is closely observed; the patients included in this report were checked every 15 minutes throughout the night, and graphic sleep records were kept. Hora sombre medications were given at 9:00 p.m.; patients were awakened at 6:00 a.m.

Medomin or one of a group of sedatives commonly employed at this hospital was ordered in a random fashion for these patients when a sedative was deemed necessary by the physician (C. K.). The doses employed varied according to the estimated degree of probable sleep disturbance. The group of commonly administered sedative-hypnotics, hereafter referred to as the heterogeneous group, and the range of doses are listed in table 1. Medomin was used in doses ranging from 200–1,200 mg.

The effect of sedation was evaluated simply. If a patient experienced five or more hours of sleep after receiving medication, it was considered effective; if less than five hours, poorly effective. The only exceptions occurred when the need for sedative medication became definitely indicated in the late evening or early morning hours; if, under these circumstances, a patient slept 75 per cent or more of the remaining sleeping hours, then the drug was considered effective. This situation prevailed in only 26 of the 263 trials.

RESULTS

Two hundred and sixty-three h.s. sedative trials were observed among the 49 patients reported upon, Medomin on 160 occasions in doses from 200 to 1,200 mg. and members of the heterogeneous group as listed before on 103 occasions.

The results are summarized in the following paragraphs, the patients having been separated into three psychiatric diagnostic categories: schizophrenia, depressive reactions and senile brain disease. In the tables depicting the results in each group, the patients are divided according to their classification into either severe or mild to moderate degrees of sleep disturbance. The effect of sedation is evaluated as being either effective or poorly effective according to the criterion mentioned previously. The various doses of Medomin employed are shown separately; the members and doses of the heterogeneous sedative-hypnotic group are lumped together. The term 'trial' as used in the tables or elsewhere means a single night in which an agent was administered to induce sleep.

I. *Schizophrenia:* 16 patients—8 male, 8 female, ages 22–52. In this group of 16 patients Medomin was administered on 40 occasions and was considered effective on 34 (85%); members of the mixed group were used in 39 trials of which 30 were deemed effective (77%). Of the 16 patients only one was classified as having severe sleep disorder; this was a 23-year-old male paranoid schizophrenic in an acute homosexual panic. Of the 6 Medomin failures, 4 were met with in this individual (doses 400, 800, 1,000 and 1,200 mg.); this case also provided 3 of the 9 failures with the mixed group of sedatives (Barbital, 600 mg.; morphine and scopolamine, 16 and 0.4 mg., on two occasions). The 8 remaining failures (2 Medomin and 6 in the heterogeneous group) were obtained in five patients with moderate sleep disturbance; in these five, however, Medomin was usually found effective in doses of 200 to 800 mg. (2 failures in 11 trials). In the category described as mild to moderate sleep disturbance, table 2 shows that Medomin in doses from 200 to 800 mg. and members of the mixed group of sedatives in their lower range of doses indicated in table 1 produced a satisfactory result in the great majority of trials.

II. *Depressive reactions:* 11 patients—2 male, 9 female, ages 30–67. Among these 11 patients Medomin was found to give a good soporific result in 40 of 48 instances (83%); members of the heterogeneous in 12 of 22 trials (55%). Sevee of the 8 occasions in which Medomin was not effective were encountered in three female patients who suffered severe sleep disorder; doses of 400 to 600 mg. were employed. This trio of patients also furnished 7 of the 10 failures in the mixed group of sedative-hypnotics (chloral hydrate, 1,000 mg.; pentobarbital, 200 mg.; seconal, 400 mg.; phenobarbital, i.m., 400

TABLE 2.—HYPNOTIC EFFECT IN SCHIZOPHRENICS

	Medomin												Other Hypnotics	
	Dosage (mgm.)												Dosage (mgm.)	
	200		400		600		800		1000–1200		Totals		See table 1	
	E	PE	E	PE	E	PE	E	PE	E	PE	E	PE	E	PE
Mild/moderate insomnia (15 pts.)	18	2	9	0	3	0	2	0	—	—	32	2	25	6
Severe insomnia (1 patient)	—	—	1	1	—	—	1	1	0	2	2	4	5	3
Totals	18	2	10	1	3	0	3	1	0	2	34 (85%)	6	30 (77%)	9

E = Effective Trials; PE = Poorly Effective Trials.

TABLE 3.—HYPNOTIC EFFECT IN DEPRESSIVE GROUP

	Medomin												Other Hypnotics	
	Dosage (mgm.)												Dosage (mgm.)	
	200		400		600		800		1200		Totals		See table 1	
	E	PE	E	PE	E	PE	E	PE	E	PE	E	PE	E	PE
Mild/moderate insomnia (7 pts.)	13	0	18	1	2	0	—	—	—	—	33	1	7	1
Severe insomnia (4 patients)	—	—	1	4	0	3	4	0	2	0	7	7	5	9
Totals	13	0	19	5	2	3	4	0	2	0	40 (83%)	8	12 (55%)	10

E = Effective Trials; PE = Poorly Effective Trials.

TABLE 4.—HYPNOTIC EFFECT IN SENILE PATIENTS

	Medomin												Other Hypnotics	
	Dosage (mgm.)												Dosage (mgm.)	
	200		400		600		800		1000		Totals		See table 1	
	E	PE	E	PE	E	PE	E	PE	E	PE	E	PE	E	PE
Mild/moderate insomnia (7 pts.)	30	1	28	2	5	1	—	—	—	—	63	4	29	8
Severe insomnia (2 patients)	—	—	0	2	0	3	—	—	—	—	0	5	1	4
Totals	30	1	28	4	5	4	—	—	—	—	63 (88%)	9	30 (72%)	12

E = Effective Trials; PE = Poorly Effective Trials.

mg.; amytal, i.m., 250 mg.; and paraldehyde, i.m., 10 cc.). Only one other patient in the group was classified as a severe sleep disorder; this woman was effectively controlled by 800 to 1,200 mg. of Medomin on all six occasions in which it was used; Barbital, 600 mg., and paraldehyde, i.m., 20 cc. with scopolamine, 0.4 mg., were poorly effective. The remaining 7 patients presented mild to moderate insomnia and were effectively sedated by doses of 200 to 400 mg. of Medomin and also to the same degree by the lower range of doses of the mixed group of soporifics.

III. *Brain syndrome associated with senile*

TABLE 5.—SEVERE SLEEP DISTURBANCE (7 PATIENTS)

Medomin (25 trials)		Heterogeneous Group (27 Trials)	
Effective trials	Poorly effective trials	Effective trials	Poorly effective trials
9 (40%)	16 (60%)	11 (41%)	16 (59%)

TABLE 6.—MILD TO MODERATE SLEEP DISTURBANCE (42 PATIENTS)

Medomin (135 Trials)		Heterogeneous Group (76 Trials)	
Effective trials	Poorly effective trials	Effective trials	Poorly effective trials
128 (95%)	7 (5%)	61 (80%)	15 (20%)

TABLE 7.—SUMMARY OF HYPNOTIC EFFECT (263 Trials in 49 Patients)

Medomin		Other Hypnotics	
Effective trials	Poorly effective trials	Effective trials	Poorly effective trials
137 (85.6%)	23	72 (69.9%)	31

brain disease: 22 patients—8 male, 14 female, ages 69–97. Among the 22 senile patients included in the study, Medomin was found to be effective in 63 of 72 trials (88%); of 42 trials with members of the mixed group, there were 30 successes (72%). Five of the 9 Medomin failures were met with in the only 2 patients of the group who were considered to be severely disturbed; it was employed only five times (doses 400 to 600 mg.) in these two patients and was considered ineffective in each instance. Members of the heterogeneous group of sedative-hypnotics were administered to these same two patients also on five occasions, and four failures ensued (paraldehyde, i.m. and p.o., 10 cc.; chloral hydrate, 900 mg.). The remaining four Medomin failures (200–600 mg.) occurred in four patients in which it was used successfully in the same doses on nine other occasions. With the exception of the two patients mentioned, all members of the senile group were classified as having mild to moderate sleep disorder and experienced adequate response to sedation in the great majority of times with Medomin in 200 to 600 mg. doses; these results compared favorably with those obtained using the various sedatives in the mixed group.

In the 160 instances in which Medomin was administered to all 49 patients studied, no toxic reactions or undesirable side effects or after effects were observed. This should be emphasized in the senile group which differed from the other two groups not only in psychiatric classification but also in that it represented a much more advanced age group. The majority of the members of the senile group suffered one or more of the various organic diseases frequently encountered in the elderly, most commonly, general arteriosclerosis and heart disease. Inasmuch as Medomin is a member of the barbiturate family, it should also be noted that in the senile group no instances of increased agitation or excitation were observed following its administration.

Tables 5 and 6 depict the results when the 49 patients are divided according to degree of sleep disturbance into mild to moderate and severe groups and are examined separately Table 5 shows that in the 7 patients classified as severe sleep disorders both Medomin and representatives of the heterogeneous group produced a satisfactory sleep response in less than half of the trials; Medomin was used in doses of 400 to 1,200 mg. and the mixed group in the high range of the doses listed in table 1. However, in the mild to moderate sleep disturbance group of 42 patients (table 6), Medomin was effective in 95% of the trials and members of the heterogeneous group in 80%.

Summarizing the results of 263 trials in all 49 patients, regardless of nature or severity of the insomnia, it is seen (Table VII) that sleep was effectively induced in 137 instances (85.6%) with Medomin; various other representative hypnotics in customary dosages produced 72 effective trials (69.9%) in these patients.

CONCLUSIONS

On the basis of the foregoing clinical observations it is reasonably suggested that Medomin, when employed to alleviate mild to moderate degrees of sleep disorder in the mentally disturbed, will produce a high proportion of satisfactory responses and will compare favorably with the more commonly

used soporifics. Doses of 200 to 400 mg. are adequate. In cases of severe sleep disorder even higher doses of Medomin up to 1,200 mg. cannot be expected to give consistently adequate results; however, in our observations, the results were not measurably inferior to those obtained with the higher range of doses of the group of soporifics listed in table 1. Although not administered to any of our patients, it has been reported that Medomin may be safely prescribed in single doses up to 2,400 mg. Perhaps with doses of this magnitude better results could be obtained in instances of severe sleep disturbance.

Medomin is well tolerated even by the aged and chronically ill. No untoward side effects or after effects or toxic reactions were noted.

Summary

Cycloheptenylethyl barbituric acid (Medomin), a short-acting barbiturate with a wide dosage range, was administered as h.s. sedation to 49 mentally disturbed patients with sleep disturbance in doses varying from 200 to 1,200 mg. Also, in the same patients, various members of a group of commonly used sedative-hypnotics were administered on other occasions for the same purpose (see table 1 for drugs and doses). A result was considered effective if 5 or more hours sleep followed administration of an agent and poorly effective if less than 5 hours.

The 49 patients consisted of 16 schizophrenics, 11 with depressive reactions and 22 with senile brain disease. Forty-two patients were classified as having mild to moderate degrees of sleep disorder and seven as having seve re forms.

Analysis of the observations suggested the following conclusions:

1. Medomin was found to be an effective soporific agent for mild to moderate degrees of sleep disorder encountered in the types of mentally disturbed patients described. Two hundred to 400 mg. proved to be an adequate h.s. dose. The results with Medomin compared favorably with those obtained with the group of commonly employed sedative-hypnotics used in comparison.

2. In cases of severe sleep disturbance Medomin in doses of 400 to 1,200 mg. was unsatisfactory in more than half the trials; similar results were found with representatives of the comparison group of sedatives.

3. In the senile group no instances of increased agitation or excitement were observed after Medomin (200 to 800 mg. doses).

4. Medomin was well tolerated over the range of doses used (200 to 1,200 mg.). No untoward side effects, toxic reactions or undesirable after effects were noted.

BIBLIOGRAPHY

1. Argy, W. P., Linegar, C. R., and Dille, J. M.: Studies on barbiturates. XV. The excretion of barbital in normal and nephropathic subjects. *J. Pharm. & Exper. Therap., 57:* 258, 1936.
2. Brusca, D. D.: Clinical study of cycloheptenylethyl-barbiturate (Medomin) for insomnia. *J. Nerv. & Ment. Dis.* (In press).
3. Fazekas, J. F., and Koppanyi, T.: The effects of cycloheptenylethyl barbituric acid (Medomin) in man. To be published.
4. Fritzsche, R.: Medomin, a new hypnotic. *Praxis, 31:* 740, 1942.
5. Koppanyi, T., Murphy, S. W., and Krop, S.: Studies on barbiturates. *Arch. Internat. de Pharmacodyn. et de Therapie, 46:* 76, 1933.
6. Koppanyi, T., Morgan, C. F., and Princiotto, J. V.: Essential elimination of sodium cycloheptenyl-ethyl-barbiturate (Medomin) in rabbits. *J. Am. Pharm. A.* (Scient. Ed.), *44:* 221, 1955.
7. Mutrux, S.: The hypnotic and sedative properties of Medomin. *Praxis, 35:* 237, 1946.
8. Pulver, R.: The chemical decomposition of Medomin in the body. *Schweiz. med. Wchnschr., 73:* 124, 1943.
9. Rust, T.: The treatment of postpartum insomnia with Medomin. *Praxis, 34:* 19, 1945.
10. Zuercher, P.: Investigations of the hypnotic Medomin in the treatment of tuberculosis patients at high altitudes. *Praxis, 35:* 369, 1946.

SELECTION OF PATIENTS FOR TREATMENT WITH ALPHA-4-PIPERIDYL BENZHYDROL HYDROCHLORIDE

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This clinical work was designed as a preliminary trial of a new anti-hallucinogenic agent, Frenquel, in order to determine its usefulness, its potentialities and its worthiness for further and more lengthy study and to define more narrowly than hitherto the psychiatric field in which such study might prove to be of greatest value. Consideration both of the poverty of our present therapeutic resources and of the extent of the social, economic, human and medical problems constituted by the malignant psychoses has convinced the author of the usefulness of such clinical contributions towards the better comprehension of this field.

Alpha-4-piperidyl benzhydrol hydrochloride (Frenquel) is a gamma-isomer of Meratran (alpha-2-piperidyl benzhydrol hydrochloride). Brown and others (1) showed it to be antagonistic to the central stimulant action of the latter drug.

Fabing (2) demonstrated the drug to be a successful partial or complete blocking agent against certain hallucinogens without altering the autonomic effects of these drugs. Studying this phenomenon in the rabbit, Himwich (4) concluded that Frenquel may act primarily upon the reticular activating system of the brain stem. In clinical studies, Monroe, Heath and others (5) reported a single case of schizophrenia in which EEG abnormalities in the septal area disappeared after Frenquel was given. This patient also improved clinically. Rinaldi and Himwich (7) showed that LSD-25 produced EEG abnormalities in rabbits, and that in these animals normal activity was restored within 2–10 minutes after the administration of Frenquel. Similar abnormalities produced by other drugs such as di-isopropylfluorophosphate (DFP), amphetamine and Meratran were not affected.

Fabing and Hawkins (3) reviewed a mixed group of 115 patients suffering from numerous neuropsychiatric disorders. Their group included 14 diagnosed as cases of acute schizophrenia; five of these lost their schizophrenic disorder within 1 to 3 days on Frenquel alone, in doses of 20 to 300 mg. per day. The cases diagnosed "chronic schizophrenia" comprised 34 patients with a range of duration of illness varying from 1 to 25 years and varying in age between 11 and 60. Eight of these patients were able to return to a normal social and vocational life without evidence of regression during a follow-up period of up to one year. Fabing and Hawkins covered a wide field in this clinical work and came to the general conclusion that Frenquel may have a circumscribed, although inconsistent, use in the treatment of schizophrenia and schizophrenia-like disorders.

Proctor and Odland (6) found the use of Frenquel encouraging in acute psychotic states with delusions and hallucinations as the primary symptoms, and they considered that it could be used as a trial when these symptoms were present even in patients with organic brain deterioration or chronic brain syndromes. They report that the best results were obtained when it was used in the treatment of acute toxic hallucinosis, no single case of which is included in the present study.

In an attempt to narrow the field of usefulness of the drug still further, Rinaldi, Rudy and Himwich (8) reported a selected series of 39 cases with an average hospitalization period of 17.5 years. There was a striking diminution of hallucinations and delusions in 5 of these cases, while 16 others showed, to a varying extent, other alterations such as an increase in friendliness and co-operativeness, a decrease in activity and a decrease in inappropriateness of mood. The dosage used was 20 mg. per day over a period of eight weeks. It is believed by the author that experimental work suggests that larger doses over a shorter period are more likely to be effective. This was done in the following study, which also attempts to narrow the field of utility of the drug without regard to diagnosis.

Conduct of the Study

The patients numbered 64. All were female; this was due to the fortuitous circumstance that during the period of the study the author was clinically associated with the female wing of the hospital.

Ages ranged from 16 to 74 years with an average of 46.5 years. Cases had been in hospital for periods of 3 months to 36 years. The average hospitalization period was 10.8 years.

The criticism is frequently and justifiably levelled that the criteria for the diagnosis of schizophrenia vary to such a degree between individual psychiatrists and schools that claims for the advantages of this or that therapeutic measure are rendered invalid. In an effort to avoid this criticism no attempt at affixing a diagnostic label has been made. This policy has also been dictated by the author's suspicion of the concept of schizophrenia as a disease entity. All female patients from a population of 255 within the hospital were reviewed personally by the author, and all those suffering from auditory hallucinations were included in the group, even in those few cases in whom this phenomenon was intermittent. All those admitted or readmitted during the four weeks preceding the start of the study were excluded. It is realized that this policy may be interpreted as an oversimplification, but it was held to be unavoidable. There were no cases of toxic or alcoholic hallucinosis in the hospital during the period of the study.

A group of 25 from the total of 64 patients was selected at random for treatment with a placebo similar in shape, color and taste to Frenquel. Patients receiving the active drug therefore totalled 39, a figure coincidentally equal to Rinaldi, Rudy and Himwich's selected group. The nursing staff was informed of the nature and purpose of the study but was not told which patients were receiving the placebo. The patients themselves were given no direct information.

Senior nurses in charge of wards were asked to keep daily notes as to mood, behavior, activity and the presence of auditory hallucinations. Relatives and friends were interviewed whenever possible without, however, being told that the trial was in progress. In addition, each patient was observed daily by the author and was followed up daily for at least two weeks after treatment stopped. Temperature, pulse, respiration and blood pressure recordings were taken before, during and after the study.

The patients were distributed throughout the female wing of the hospital. The sample was a representative social, cultural and ethnic cross-section of the community served by a public mental hospital in Northwestern Ontario.

Dose

Each patient was given 20 mg. Frenquel orally three times a day for 14 days. During this period all other forms of medication and treatment including psychotherapy were denied. An effort was made to give the patients concerned neither more nor less attention than that to which they had been accustomed although some increase in attention paid to individuals was inevitable.

Results

These are shown in tabular form (tables 1 to 4) and are discussed below.

Discussion

Twenty-five patients were taken at random from the group for treatment with the placebo. Sixteen (64%) of these were unchanged in any respect. Seven (28%) of the remainder showed minimal improvement in the form of increased pleasantness, and four of these reverted to their initial condition in the course of the 14 days during which the tablets were administered, while the other three reverted on the fifteenth day. It can be assumed reasonably that such minimal improvement as these patients showed was due to external factors such as the unavoidable increased attention received by them. Two cases (8%), nos. 52 and 60, did show a greater degree of improvement in the form of increased interest and sociability, one reverting, however, on the ninth day of treatment and the other on the day following the end of the course.

None of the patients receiving the placebo showed any reduction of her delusions or hallucinations.

Thirty-nine patients received the Frenquel tablets. The results in this group were very different and encouraging and were much in

TABLE 1.—PATIENTS TREATED WITH FRENQUEL

Name	Age	Period in Hospital	Initial Symptoms	Results
1) D. A.	53	9 yr.	Self-absorbed, almost mute. Unoccupied, antagonistic. Required help to dress, showed inappropriate laughter. Auditorily hallucinated.	Increased responsiveness, activity, awareness and initiative. Took part in dancing, dressed herself. Reverted on 15th day. Mild improvement.
2) V. A.	40	5 yr.	Seclusive, disinterested, unoccupied, negativistic. Auditorily hallucinated.	Mood incongruity appeared on 3rd day. Increased interest in dress and books, pleasant and cooperative. Reverted on 15th day. Mild improvement.
3) L. B.	36	4 yr.	Seclusive, without spontaneity or activity. Auditorily hallucinated. Symptoms arose following head injury.	No change.
4) Ly. B.	43	3 yr.	Irritable, anxious, aggressive. Numerous ideas of reference. Pre-recognition phenomena, auditory hallucinations intermittent and absent at start of trial.	No change.
5) E. C.	46	19 yr.	Family history of schizophrenia. Vague, seclusive, silent, unoccupied, bizarre delusions. Auditorily hallucinated.	Began to answer hallucinations loudly. Took part in conversation but irrelevantly. Reverted on 23rd day. Minimal improvement.
6) Ed. C.	46	7 yr.	Cheerful, facile, sometimes abusive and threatening. Had intellectual deficits. Deluded, auditory hallucinations intermittent and absent at start of trial.	No change.
7) L. C.	55	3 months	Had 11-year history. Preoccupied, seclusive, apathetic, unoccupied. Mood incongruous, numerous bizarre ideas, auditorily hallucinated.	Became cheerful, responsive, sociable, interested. Bizarre ideas and auditory hallucinations ceased. Reverted on 15th day. Maximal improvement.
8) M. C.	23	6 months	Very seclusive, apathetic, disinterested, almost mute, suspicious, deluded. Auditorily hallucinated.	Increased alertness, sociability and affective response. Took interest in herself and others. Decreased suspicion and delusions and hallucinations. Increased agitation. Reverted on 15th day. Moderate improvement.
9) E. D.	54	36 yr.	Restless, aloof, unoccupied, unfriendly. Bizarre delusions. Auditorily hallucinated.	Increased friendliness, sociability and spontaneity, took part in communal activities. Reverted on 18th day. Mild improvement.
10) G. E.	74	6 yr.	Uncooperative, apathetic, occasionally aggressive, seclusive, had intellectual deficits. Auditory hallucinations intermittent and absent at start of trial.	No change.
11) J. E.	16	6 months	Anxious, seclusive, bizarre delusions, auditory hallucinations.	Increased sociability, increased awareness and anxiety. Increased agitation. Diminished delusions and hallucinations. Reverted on the 18th day. Moderate improvement.

TABLE 1.—(CONTINUED)

Name	Age	Period in Hospital	Initial Symptoms	Results
12) J. F.	70	27 yr.	Family history of schizophrenia. Restless, manneristic, facile, numerous somatic delusions, auditorily hallucinated.	Increased alertness and interest. Attention better sustained, less easily irritated. Hallucinations and delusions stopped. Reverted on 17th day. Maximal improvement.
13) J. G.	46	3 yr.	Family history of schizophrenia. Quiet, apathetic, auditory hallucinations inconstant and absent at start of trial.	No change.
14) A. H.	42	12 yr.	Family history of mental illness, seclusive, numerous somatic delusions, auditorily hallucinated.	Increased interest and activity, increased spontaneity, auditory hallucinations no longer continuous. Reverted on 20th day. Moderate improvement.
15) C. H.	51	25 yr.	Seclusive, unoccupied, manneristic, disinterested, negativistic. Mood inappropriate. Auditory hallucinations.	Increased awareness, interest and sociability. Took part in communal activities and read books. Decrease in incongruous giggling and auditory hallucinations. Reverted on 19th day. Moderate improvement.
16) H. H.	45	1 yr.	Family history of schizophrenia. Very seclusive, disinterested, preoccupied. Mood incongruous, had intellectual deficits, auditorily hallucinated.	Increased sociability and responsiveness, more interested. Took part in dancing and communal activities. Hallucinations ceased. Reverted on 24th day. Maximal improvement.
17) J. H.	50	20 yr.	Seclusive, stereotyped, occasionally disturbed, suspicious, disinterested. Had intellectual deficits. Numerous delusions. Auditory hallucinations.	No change.
18) N. H.	44	15 yr.	Seclusive, disinterested, withdrawn, antagonistic, noisy. Mood incongruous, auditorily hallucinated.	Became cooperative, friendly, sociable, interested. Increased emotionality. Noisiness and hallucinations ceased. Reverted on 17th day. Maximal improvement.
19) A. K.	50	2 yr.	Seclusive, disinterested, preoccupied, incongruity of mood, had intellectual deficits. Auditorily hallucinated.	Increased interest. Took part in communal activities. Reverted on 17th day. Mild improvement.
20) M. K.	37	2 yr.	Contented, dependent, intelligent. Auditory hallucinations freely admitted. Insight apparently retained.	No change.
21) My. K.	29	8 yr.	Family history of mental illness. Seclusive, disinterested, preoccupied, mood incongruous, had intellectual deficits, auditorily hallucinated.	Increased quarrelsomeness and untidiness. Marked loss of appetite. Increased awareness, emotionality and interest in self and others and books. Greater affective response. Reverted on 16th day. Mild improvement.
22) R. M.	58	32 yr.	Friendly, cooperative, facile, deluded, auditorily hallucinated.	No change.

TABLE 1.—(CONTINUED)

Name	Age	Period in Hospital	Initial Symptoms	Results
23) M. Mc.	33	17 yr.	Indifferent, apathetic, untidy, seclusive, preoccupied, deluded, auditorily hallucinated.	Increased interest and emotionality but also increased restlessness, and agitation and awareness. Hallucinations and delusions ceased. Reverted on 18th day. Maximal improvement.
24) N. N.	42	2 yr.	Emotional, anxious, antagonistic, seclusive and abusive. Bizarre delusions, auditory hallucinations.	Ceased being abusive, became pleasant, cooperative and happy. Took interest in books and ward activities. Diminished delusions and hallucinations. Reverted on 16th day. Moderate improvement.
25) M. O.	68	12 yr.	Family history of mental illness. Quarrelsome, demanding, disinterested in others. Had intellectual deficits. Auditory hallucinations intermittent and absent at start of trial.	No change.
26) C. R.	47	6 months	Seclusive, anxious, self-accusatory, deluded, auditorily hallucinated.	Increased emotionality and indecisiveness. More sociable. Much less guarded. Reverted on 19th day. Mild improvement.
27) L. R.	54	11 yr.	Noisy, aggressive, had intellectual deficits, auditory hallucinations intermittent and absent at start of trial.	No change.
28) A. S.	36	17 yr.	Family history of mental illness. Seclusive, slow, preoccupied, emotionally flat. Had intellectual deficits. Hallucinations very sporadic and absent at start of trial.	Greater affective response, otherwise no change. Reverted on 18th day. Minimal improvement.
29) An. S.	30	8 yr.	Seclusive, apathetic, preoccupied, untidy. Mood incongruous, auditorily hallucinated.	Increased friendliness and sociability. Greatly increased interest in appearance, ward activities and outside events and own future. Hallucinations ceased. Reverted on 19th day. Maximal improvement.
30) E. S.	44	8 yr.	Seclusive, unoccupied, noisy, abusive, deluded, auditorily hallucinated.	Quieter, abusiveness ceased, became able to sustain coherent conversation, delusions and hallucinations diminished. Reverted on 22nd day. Moderate improvement.
31) H. S.	50	28 yr.	Excitable, euphoric, occasionally apathetic, hallucinations sporadic and absent at start of trial.	Increased irritability but also much more interest in ward activities. Reverted on 21st day. Mild improvement.
32) L. S.	42	2 yr.	Pleasant, seclusive, unoccupied, incoherent, auditorily hallucinated.	Increased interest in ward activities, dancing. Increased awareness. Speech became coherent and connected. Diminished hallucinations. Reverted on 15th day. Moderate improvement.

TABLE 1.—(CONCLUDED)

Name	Age	Period in Hospital	Initial Symptoms	Results
33) V. S.	39	10 yr.	Seclusive, apathetic, disinterested, withdrawn, exclusively occupied with phantasy. Deluded, auditorily hallucinated.	Greatly increased interest in self and others. Took part in ward activities. Decreased delusions and hallucinations. Reverted on 16th day. Moderate improvement.
34) W. S.	50	7 yr.	Family history of schizophrenia. Withdrawn, seclusive, unoccupied, deluded, auditorily hallucinated.	Marked diminution of hallucinations and delusions. Less withdrawn. Reverted on 18th day. Moderate improvement.
35) A. W.	56	12 yr.	Seclusive, facile, noisy, restless, incongruity of mood, had intellectual deficits. Auditorily hallucinated.	Much less restless, much more alert and quieter. Incongruity of mood and hallucinations diminished. Reverted on 17th day. Moderate improvement.
36) C. W.	42	8 yr.	Pleasant, cooperative, facile, seclusive, deluded; numerous ideas of reference, auditorily hallucinated.	Happier, more sociable, more interested in outside events and in personal appearance. Delusions and hallucinations absent. Reverted on 17th day. Maximal improvement.
37) M. W.	44	7 yr.	Seclusive, disinterested, almost mute, deluded and auditorily hallucinated.	Increased interest in self and others. Increased sociability. Took part in communal activities. Reduction of delusions. Reverted on 17th day. Moderate improvement.
38) T. W.	55	19 yr.	Seclusive, disordered and bizarre behavior, disinterested, noisy, mood incongruous, auditorily hallucinated.	Quieter, took interest in personal appearance, increased sociability, danced, hallucinations diminished. Reverted on 16th day. Moderate improvement.
39) A. Z.	59	31 yr.	Seclusive, apathetic, disinterested, preoccupied, manneristic, resistive, antagonistic, irritable, had intellectual deficits and auditorily hallucinated.	No change.

excess of those which might be expected when any change is effected to the internal or external environment of a psychotic patient.

Only 11 (28%) of these were unaffected by the drug in contrast to the 16 (64%) in the placebo group. A closer examination of these 11 cases is relevant. No less than 6 of them (nos. 4, 6, 10, 13, 25 and 27) had hallucinations which were intermittent in occurrence and absent at the start of the trial, remaining so throughout. This periodicity and absence of hallucinations were seen in only two (nos. 28 and 31) of the 28 patients who did show an improvement. Among the other 5 cases who were unaffected was the only one (no. 3) in the entire series with a history of head injury as the initial incident of her illness. Four (nos. 17, 20, 22 and 39) were distinguishable from the others only in that two of them (nos. 22 and 39) were among the small minority of three in the entire group with a length of stay in hospital exceeding 30 years, while a third (no. 20) was the only case with retention of insight, a patient whose open confession to hallucinatory phenomena and obvious contentment in hospital lay her open to some suspicion.

These results suggest that Frenquel plays no part in the treatment of psychotic hallucinosis, where this phenomenon is intermittent. It is also suggested that Frenquel is unlikely to be

TABLE 2.—PATIENTS TREATED WITH PLACEBO

Name	Age	Period in Hospital	Symptoms at Start of Trial	Results
40) I. A.	37	7 yr.	Seclusive, apathetic, sometimes irritable, mood incongruous, auditorily hallucinated.	No change.
41) L. A.	46	5 yr.	Seclusive, negativistic, suspicious, deluded, auditory hallucinations intermittent and absent at start of trial.	No change.
42) E. B.	52	22 yr.	Seclusive, unoccupied, noisy, habits poor, deluded, auditory hallucinations.	Quieter, habits improved slightly. Reverted on 15th day. Minimal improvement.
43) G. B.	43	5 yr.	Seclusive but pleasant, mood incongruous, bizarre delusions, auditorily hallucinated.	No change.
44) H. B.	50	2 yr.	Seclusive but very noisy requiring heavy sedation up to start of trial. Very guarded. Multiple delusions. Auditory hallucinations.	Pleasanter, less noisy. Reverted on 15th day. Minimal improvement.
45) E. C.	43	6 yr.	Seclusive, unoccupied, disinterested, deluded and auditorily hallucinated.	No change.
46) L. C.	57	15 yr.	Seclusive, unoccupied, cooperative, pleasant, deluded and with auditory hallucinations.	No change.
47) M. C.	25	5 yr.	Family history of schizophrenia. Seclusive, poor personal habits, restless, resistive, suspicious. Mood incongruous. Deluded. Auditorily hallucinated.	Pleasanter and less resistive but reverted during trial on 9th day. Minimal improvement.
48) V. D.	56	13 yr.	Seclusive, unoccupied, apathetic, bizarre delusions, ideas of reference and auditory hallucinations.	No change.
49) H. E.	38	8 yr.	Seclusive, antagonistic, frequently irritable, suspicious. Deluded and auditorily hallucinated.	No change.
50) A. F.	57	5 yr.	Seclusive but daily outbursts of noisy disturbed behavior. Delusions and auditory hallucinations.	Pleasanter and quieter. Reverted on 15th day. Minimal improvement.
51) D. F.	46	11 yr.	Family history of schizophrenia. Cooperative but very seclusive and disinterested. Mood incongruous. Auditorily hallucinated.	No change.
52) M. F.	45	20 yr.	Seclusive with daily outbursts of bad, aggressive talk. Deluded and auditorily hallucinated. Received Serpasil 2 mg. daily up to start of trial.	Quieter, increased interest. More active, danced. Reverted on 15th day. Mild improvement.
53) E. G.	40	7 yr.	Seclusive, incoherent, incongruity of mood, deluded and auditorily hallucinated.	No change.

TABLE 2.—(CONTINUED)

Name	Age	Period in Hospital	Symptoms at Start of Trial	Results
54) D. H.	34	5 yr.	Seclusive, without initiative, very labile emotionally. Deluded and auditorily hallucinated.	No change.
55) M. H.	40	9 yr.	Seclusive, often very disturbed, preoccupied, antagonistic. Deluded and auditorily hallucinated.	No change.
56) My. H.	71	19 yr.	Seclusive, unoccupied, antagonistic. Numerous somatic delusions. Hallucinations inconstant and absent at start of trial.	No change.
57) T. H.	54	21 yr.	Very seclusive, apathetic, sometimes noisy. Personal habits poor. Has delusions and auditory hallucinations.	No change.
58) L. K.	31	1 yr.	Seclusive, unoccupied, withdrawn, apathetic, suspicious, mood incongruous, auditorily hallucinated.	No change.
59) M. K.	50	4 yr.	Seclusive, unoccupied, unfriendly, obsessive, mood incongruous, delusions and auditory hallucinations.	Friendlier and more cooperative but reverted on 7th day of trial. Minimal improvement.
60) K. M.	37	6 yr.	Seclusive, disinterested, apathetic, personal habits poor, auditorily hallucinated.	Increased sociability, attempted conversations with others. Took interest in personal appearance. Reverted during trial on 9th day. Mild improvement.
61) G. Mc.	60	20 yr.	Seclusive, resistive, antagonistic, irritable, noisy. Deluded and auditorily hallucinated.	No change.
62) E. N.	65	17 yr.	Seclusive, unoccupied, frequently noisy and disturbed. Deluded and auditorily hallucinated.	Pleasanter, less noisy. Reverted during trial on 10th day. Minimal improvement.
63) J. P.	64	19 yr.	Seclusive, very irritable and antagonistic, suspicious. Deluded and auditorily hallucinated.	Pleasanter but reverted during trial on 5th day. Minimal improvement.
64) I. T.	38	2 yr.	Seclusive, disinterested, apathetic, occasionally aggressive. Deluded and auditorily hallucinated.	No change.

TABLE 3.—COMPARISON BETWEEN PLACEBO AND FRENQUEL

	Placebo	Frenquel
No change	64%	28%
Minimal improvement	28%	5%
Mild improvement	8%	18%
Moderate improvement	—	31%
Maximal improvement	—	18%

TABLE 4.—REVERSION TO INITIAL CONDITION IN DAYS FROM START OF TRIAL

	Placebo (Av. in Days)	Frenquel (Av. in Days)
Minimal improvement	11	21
Mild improvement	12	20
Moderate improvement	—	17
Maximal improvement	—	18

effective in patients hospitalized for a period of more than 30 years.

Twenty-eight (72%) of the patients receiving Frenquel showed varying degrees of symptom amelioration, while none of them reverted to her initial state during the course of administration of the tablets. All these 28 did revert within 10 days of the cessation of the drug. There appeared to be no relation between the period the improvement was maintained and the degree of that improvement, but it is noteworthy that patients showing greatest benefit tended to revert sooner. This reversion suggests that a larger dosage, or a longer period of treatment or a maintenance dose is required.

A breakdown of the 72% improved is of significance. Twelve (31%) showed "moderate' improvement characterized by increased sociability and interest together with marked diminution of hallucinations. Seven (18%) showed "maximal" improvement in the form of complete cessation of hallucinations together with betterment in mood and behavior. Nineteen (49%) of the total of 39 receiving Frenquel showed therefore a complete or marked cessation of auditory hallucinations with associated improvements in other spheres. This figure would have been somewhat higher at 58% if those patients with intermittent hallucinations had been excluded from the study. Two (5%) showed "minimal" improvement, in the sphere of mood only, while the remaining seven (18%) showed "mild" improvement with increased sociability and interest.

The total of cases showing minimal and mild improvement among the Frenquel patients was not markedly different from those showing a similar grade of improvement among those receiving the placebo, being 23% in the former and 36% in the latter group. It is also the case that the minimal and mild improvements were those of increased friendliness, sociability and interest and as such can be ascribed to influences other than those of a drug. For these reasons Frenquel cannot, with entire justification, be credited with the minimal or mild improvements shown by 23% of the patients who received the drug. It is, however, fair to remark that, in the Frenquel group, the degree of improvement was in many cases higher than that shown by patients receiving the placebo and that, in no case, did reversion to the initial condition take place among patients on Frenquel during the course of the 14 days of administration.

A total of 19 patients (49%) of those receiving Frenquel showed not only improvement in sociability and level of interest but also either marked diminution or complete cessation of auditory hallucinations. It is necessary to determine in what respects these patients differed from those showing minimal or mild changes or no change at all. A number of possible factors was considered (table 5).

It emerges immediately that age plays little part in determining the selection of patients most likely to benefit from Frenquel. While the average age of patients showing greatest improvement was less than that of others, the range was very wide in all groups. The same is applicable to consideration of length of hospitalization as a possible factor although it is suggested that a period of more than 30 years in hospital militates against success. The number of patients with a family history of mental illness was noticeably smaller in the moderate and maximal improvement group together, than among those showing mild and minimal changes, but almost exactly equalled the number in the group which showed no change.

A small proportion (26%) of patients who showed greatest benefit had a history of overseclusive, solitary, recessive, or markedly inadequate pre-psychotic personalities often with poor school, work and social records. The proportion showing these aberrations among patients who had mild and minimal improvements was very significantly higher at 78%, but was only 27% among those who were unaffected by the drug. It is worth reiterating here that six of these 11 patients were characterized by auditory hallucinations which were intermittent in occurrence, and absent at the start of the trial. Exclusion of these six patients would convert the proportion with abnormal pre-psychotic personalities in this group from 27% to 60%. It is at least likely that personality prior to the onset of mental illness is a factor in determining the selection of patients for Frenquel.

Continuous marked incongruity and in-

TABLE 5.—POSSIBLE FACTORS INFLUENCING RESULTS IN FRENQUEL GROUP

	No Change	Minimal and Mild Improvement	Moderate and Maximal Improvement
Total	11	9	19
Average age	52 yr. Min.: 36 yr. Max.: 74 yr.	45 yr. Min.: 29 yr. Max.: 54 yr.	43 yr. Min.: 16 yr. Max.: 70 yr.
Average period in hospital	12 yr. Min.: 2 yr. Max.: 32 yr.	14 yr. Min.: 2 yr. Max.: 36 yr.	9.3 yr. Min.: 3 months Max.: 27 yr.
Family history of mental illness	2 (18%)	3 (33%)	4 (21%)
Abnormal pre-psychotic personality	3 (27%)	7 (78%)	5 (26%)
Intermittent hallucinations	6 (55%)	2 (22%)	—
Marked delusions	3 (27%)	3 (33%)	12 (63%)
Marked antagonism	6 (55%)	4 (44%)	4 (21%)
Intellectual deficits	6 (55%)	3 (33%)	2 (11%)

appropriateness of mood were seen more frequently among patients who showed highest degrees of improvement, and in all cases the improvement included a considerable diminution or complete disappearance of this affective disharmony.

The presence of overt delusions in addition to auditory hallucinations was a very much more constant initial symptom in the moderately or maximally improved patients than among those who benefited to lesser or no extents. Diminution or disappearance of hallucinations was in all cases parallelled by a like diminution or disappearance of the delusions. The delusions referred to were of the bizarre, the unsystematized and the systematized paranoid types equally, but somatic delusions (cases 12, 14 and 33) were present only among those patients who showed moderate or maximal improvement.

It is noteworthy that marked antagonism was a very much less constant initial feature in patients who improved most than it was in other groups.

A final significant difference appeared in the level of the intellectual functions of the several groups. Some degree of disorientation, often in association with memory deficits, was present in only 11% of those who benefited most from Frenquel. Similar defects were present in 55% of those who derived no benefit and in 33% of those showing minimal or mild improvement. It is not overlooked that the preoccupation and difficulty of sustained attention or concentration which characterize many psychotic patients frequently give the false appearance of organic or degenerative intellectual deficits. With this consideration in mind, it is believed that the defects of this type, shown by many of the patients who failed to benefit from Frenquel, were largely sclerotic or organic in origin although not necessarily in relation to age. In conclusion it is relevant that no hypnotic or other side effects were produced by the drug.

SUMMARY

A preliminary study of a new anti-hallucinogenic agent, alpha-4-piperidyl benzhydrol hydrochloride (Frenquel), has been carried out.

Female patients suffering from auditory hallucinations were selected from a single Ontario Hospital for the study. These numbered 64, of whom 56 had continuous hallucinations and 8 had intermittent hallucinations which were absent at the start of the trial. Twenty-five patients were given a placebo, and 39 received Frenquel. The dosage was one 20 mg. tablet three times a day by mouth for 14 days, and patients were observed until they

had reverted to their initial condition. This took place in all cases within 10 days of cessation of treatment. No toxic effects were observed.

Sixty-four per cent (64%) of patients receiving the placebo were unaffected, while only 28% of those given Frenquel showed no change. Six of the latter group of 11 were suffering from intermittent hallucinations which were absent at the start of the trial; one had a history of head injury as the initial incident in her illness; and two were among the only three patients in the entire group who had been in hospital for more than 30 years.

Twenty-three per cent (23%) of the 39 who received Frenquel showed minimal or mild improvement in mood, sociability and interest. It was held that this result could not be fairly ascribed to the action of the drug.

Forty-nine per cent (49%) of the Frenquel group showed complete or marked diminution of auditory hallucinations, in association with diminution or cessation of delusions and inappropriateness of mood together with improvement in mood, behavior, sociability and interest.

It was held that intermittent hallucinations contraindicated the use of Frenquel, and suggested that a stay in hospital of 30 years or more was an unfavorable factor.

Age, length of hospitalization up to 30 years, and the presence of a family history of mental illness were shown to have no significance in determining the selection of patients for treatment with Frenquel.

Patients with normal pre-psychotic personalities, with marked delusions of all types, in association with incongruity of affect, without intellectual deficits, but showing little antagonism are those most likely to benefit from the drug.

It is suggested that further and more intensive studies in this limited field are now called for, and that higher dosage over a longer period or a maintenance dose of this drug may well prove a more than useful weapon in the psychiatric armamentarium.

My thanks are due to Dr. J. R. Howitt, Superintendent, the Ontario Hospital, Port Arthur, for permission to carry out this study; to the nursing staff for invaluable assistance; and to my wife, Mrs. R. Mason Browne, for help with the preparation of the tables.

"Frenquel" is the trade name of the Wm. S. Merrell Company of Cincinnati for its brand of azacyclonol. I am indebted to Dr. R. C. Pogge, Director of Medical Research of that Company, for generously supplying both the drug and the placebo.

BIBLIOGRAPHY

1. Brown, B. B., Feldman, R., and Braun, D. L.: Pharmacological studies of an LSD antagonist, 4-piperidyl diphenyl carbinol hydrochloride. *Fed. Proc., 14:* 322, (Abstr.) 1955.
2. Fabing, H. D.: Studies in clinical neuropharmacology. *Neurology* (In press).
3. Fabing, H. D., and Hawkins, J. R.: A year's experience with Frenquel in clinical and experimental schizophrenic psychoses. *Dis. Nerv. System, 16:* 329–338, Nov., 1955.
4. Himwich, H. E.: Effects of Frenquel on disturbed patients with long histories of hospitalization. Read at A.P.A. Reg. Res. Conf., Omaha, Nebraska, April 23, 1955.
5. Monroe, R. R., Heath, R. G., Mickle, W. A., and Miller, W.: Cortical and sub-cortical recordings correlated with behaviour in patients and animals during the administration of rauwolfia, Thorazine and Meratran. Psychiatric Research Reports of the American Psychiatric Assn., July, pp. 25–44, 1955.
6. Proctor, R. C., and Odland, T.: Frenquel *Dis. Nerv. System, 17:* 25–28, Jan., 1956.
7. Rinaldi, F., and Himwich, H. E.: Frenquel corrects certain cerebral electrographic changes. *Science, 122:* 198–199, 1955.
8. Rinaldi, F., Rudy, L. H., and Himwich, H. E.: The Use of Frenquel in the treatment of disturbed patients with psychoses of long duration. *Am. J. Psychiat. 112:* 343–348, Nov., 1955.

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SOMATO-PSYCHOTHERAPEUTIC APPROACH TO LONG-TERM SCHIZOPHRENIC PATIENTS

A Completion Report[1]

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LEONARD ROCKMORE, M.D., AND IAN C. FUNK, M.D.

In a previous submission (1) we described a demonstration program of comprehensive psychiatric treatment designed to improve the behavioral adjustment of long-term schizophrenic patients. Results obtained during the first fifteen weeks of study were presented.

Albany Veterans Hospital is a general medical setting with approximately 200 beds allocated to long-term psychiatric patients. The experimental program was undertaken to demonstrate to our hospital community the potentialities for improvement of long-term schizophrenic patients. All available rehabilitation modalities were utilized including electroconvulsive therapy and especially group psychotherapy. Experimental and control patients, all with exceptionally poor prognoses, were matched individually for age, chronicity, and ward adjustment. Mean age was 56.2 for the demonstration group and 58.6 for controls; mean Behavioral Rating Scale score was 40.8 (of a possible 100) for demonstration patients and 40.0 for controls; mean chronicity (years since first hospitalization) was 26.7 years for the demonstration group, 26.9 for the control group. In none of these variables did the two groups differ significantly.

At the cut-off date of the first report (fifteenth week) the experimental or demonstration patients had improved significantly over the control patients in behavioral ward adjustment and showed less psychopathology. Results charted from a brief weekly rating scale were manifestly in favor of the demonstration patients.

The current report presents the final results of the experiment. It contrasts the demonstration and control patients at periodic intervals over the full six-month duration of the program. For comparative purposes, the tables and figures also include the data gathered during the first fifteen experimental weeks. The brief series of psychomotor tests was discontinued after the ninth experimental week, for the paucity of cooperative responses had rendered the data unsuitable for quantitative analysis.

RESULTS

During the sixth experimental month a demonstration patient (Patient D7) became seriously ill and was transferred to an infirmary ward. There he expired within a few days. His medical diagnosis was myocardial infarction, bronchial pneumonia, arterial heart disease. All statistical computations and significance tests made for this final month were therefore adjusted to the decreased sample size.

Several types of records were submitted to quantified treatment: (a) Behavioral Rating Scale (3), (b) Multidimensional Scale for Rating Psychiatric Patients (2), and (c) Weekly Rating Scale (1).

Table 1A contrasts the demonstration group mean scores with control group mean scores attained on the Behavioral Rating Scale (BRS) at the indicated times intervals. Figure 1 portrays these results graphically. The P/2 significance level of table 1A was recorded under the hypothesis that the demonstration group would maintain its superiority over the control group beyond the third month, i.e., the first 15 weeks.

Table 1B sets forth comparative significance tests for the control group against itself on the BRS progressively over the course of the experiment, and presents similar data for the demonstration group.

The demonstration group remained consistently superior to the control throughout the course of the experiment, and signifi-

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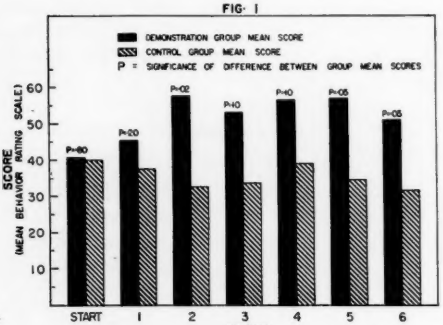
TABLE 1A.—INTERGROUP COMPARISONS OF DEMONSTRATION (D) AND CONTROL (C) SCORES ON BEHAVIORAL RATING SCALE

Statistic	Pre-Experiment	Experimental Month			
		3rd month	4th month	5th month	6th month
D mean score	40.8	53.1	56.8	57.0	51.0
C mean score	40.0	33.9	39.1	34.6	31.7
t	.34	2.15	2.10	2.70	2.46
P	.80	.10	.10	.05	.05
P/2	—	—	.05	.02	.02
F	1.24*	1.79*	2.00*	3.09*	1.18*

* Not significant at 5 per cent level of confidence.

FIG. 1



MONTHLY COMPARISONS OF DEMONSTRATION & CONTROL GROUPS:: MEAN BEHAVIOR RATING SCALE SCORES

cantly so during the final two months. The mean BRS score for the demonstration group rose steeply during the first four months, remained at a plateau for the fifth month, and then showed some decrement during the sixth or last month. At no point did it recede to its initial pre-experimental status. In sharp contrast to this, the mean BRS score for the controls showed an immediate trend downwards. Good recovery for the controls occurred at the fourth month followed by a sharp and continuous drop through the fifth and sixth months to a level well below the initial pre-experimental status (table 1B, P = .10). Significance levels for these trends are provided in the several accompanying tables.

Table 2A compares demonstration with control findings on the Multidimensional Scale (MRSPP). Higher scores reflect greater psychopathology. The control group soon showed significant decrement in health as against the demonstration group (fifteenth experimental week, P < .05) and continued to increase its relative psychopathology throughout the duration of the project

TABLE 1B.—INTRAGROUP COMPARISONS OF DEMONSTRATION (D) AND CONTROL (C) SCORES ON BEHAVIORAL RATING SCALE

Comparison*	t	P	F
Dp vs. D3	1.63	.20	3.08†
Dp vs. D4	2.90	.02	2.82†
Dp vs. D5	2.37	.05	2.99†
Dp vs. D6	1.59	.20	1.68†
D3 vs. D6	1.30	.30	1.83†
Cp vs. C3	1.41	.20	1.38†
Cp vs. C4	.23	.90	1.13†
Cp vs. C5	1.63	.20	1.62†
Cp vs. C6	2.19	.10	1.14†
C3 vs. C6	1.34	.30	1.21†

* Control and demonstration group mean scores, respectively, pre-experiment (Cp, Dp) and during the 3rd, 4th, 5th, and 6th experimental months (C3, C4, C5, C6; D3, D4, D5, D6).

† Not significant at 5 per cent level of confidence.

TABLE 2A.—INTERGROUP COMPARISONS OF DEMONSTRATION (D) AND CONTROL (C) SCORES ON MULTIDIMENSIONAL RATING SCALE

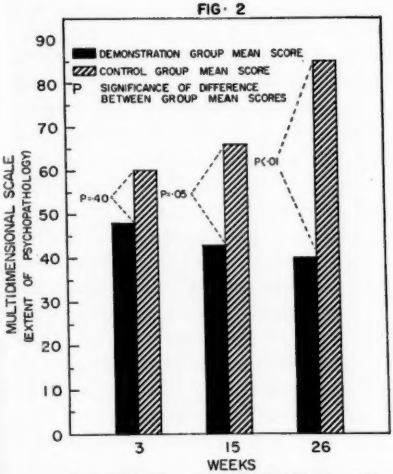
Statistic	Initial Rating		
	3rd experimental week	15th experimental week	26th experimental week
D mean score	47.91	43.07	40.18
C mean score	60.53	65.77	86.05
t	1.02	2.77	4.40
P	.40	.05	< .01
P/2	—	—	< .01
F	3.24*	2.77*	4.27†

* Not significant at 5 per cent level of confidence.

† Significant at 1 per cent level of confidence.

(twenty-sixth experimental week, P < .01). Figure 2 reflects these trends. The P/2 significance level of table 2A was recorded under the hypothesis that the control group would maintain or increase its degree of psychopathology in contrast to the demonstration group, beyond the fifteenth week. Results were indeed consistent with this hypothesis. Table 2B presents the results of comparative significance tests made with the MRSPP for the control and demonstration groups, respectively, over the course of the experiment. The control group, when compared with itself, showed a significant increment in psychopathology from the third through the fifteenth week (P < .01) and again from the fifteenth to the twenty-sixth week (P < .01). The demonstration group decreased in psychopathology progressively from start to

FIG. 2



COMPARISONS OF DEMONSTRATION AND CONTROL GROUPS: MULTIDIMENSIONAL RATING SCALE

finish, but differences did not attain statistical significance.

Figure 3 represents graphically the contrasted results for demonstration and control groups as measured by the Weekly Rating Scale (WRS) over the full experimental period of 26 weeks. The WRS scoring system and method of quantification has been explained

TABLE 2B.—INTRAGROUP COMPARISONS OF DEMONSTRATION (D) AND CONTROL (C) SCORES ON MULTIDIMENSIONAL RATING SCALE

Comparison	t	P	F
D (week 3 vs. week 15).....	1.05	.40	1.10†
D (week 3 vs. week 26).....	1.60	.20	1.14†
D (week 15 vs. week 26).....	1.37	.30	1.03†
C (week 3 vs. week 15).....	1.08	.40	1.28†
C (week 3 vs. week 26).....	4.40	<.01*	1.15†
C (week 15 vs. week 26).....	4.92	<.01*	1.48†

* Increased psychopathology.
† Not significant at 5 per cent level of confidence.

(Funk *et al.*). Figure 3 epitomizes the findings of this study. The demonstration group showed immediate gain with steady improvement throughout the course of the experiment, climbing well above its status of the fifteenth week. At no time did the demonstration group mean recede to its initial level, nor did the control mean ever *rise* above its initial or starting point.

The previous report of Funk *et al.* (1) did summarize the qualitative sequential changes for all patients from the initiation of the experiment to its fifteenth week. Immediately below are recorded the ensuing biographical developments for each man, fifteenth week to conclusion at the twenty-sixth week.

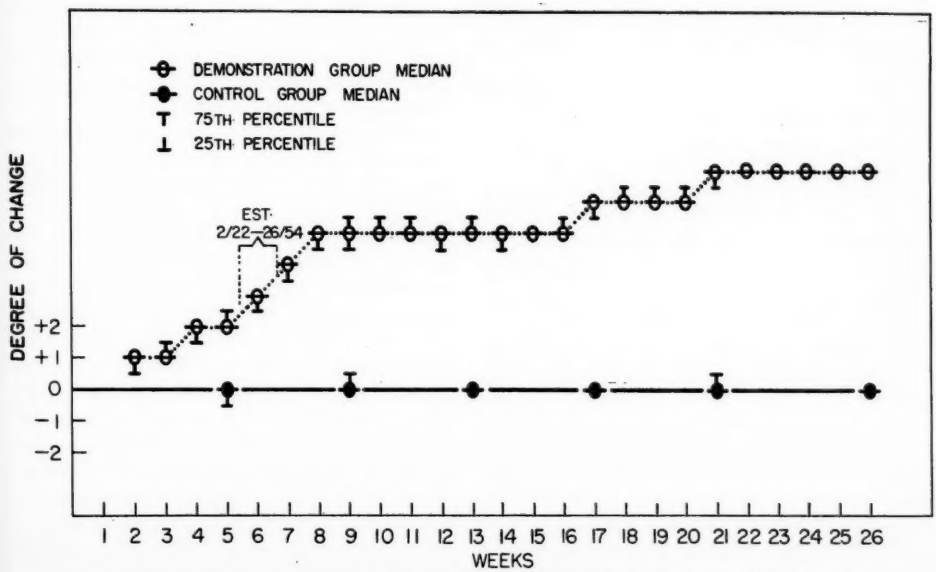


FIG. 3. Degree of change of demonstration and control groups as measured by weekly rating scale.

Demonstration Group (D)

Patient D1 received two more EST during the 15th experimental week, three during the 16th, and one during the 17th week. He became subdued, but more cooperative and friendly with ward personnel. His hoarding behavior ceased, and he no longer insisted upon wearing his cap. He was given a limited privilege card which entitled him to go off the ward in the company of another demonstration patient who had full privileges. Thereafter he visited the canteen daily and participated in off-station trips. He assumed the role of ward helper, cleaning sinks and making beds. He took no property from other patients' rooms, showed generosity with his cigarettes, and literally amazed the ward personnel with his cooperative behavior. A brief period of regression followed, and he began to wear bed clothing for decorative purposes. This behavior soon ceased. Patient formed a close relationship with the occupational therapist and desired to please her. He was unresponsive during a visit from his family, the first received in a very long while. He was, however, reaching out to ward personnel for attention and seemed desirous of forming a closer relationship with the people who were helping him. At the close of the demonstration project D1 continued to share a room on the ward with the patient who had full privileges and in whose company he participated in industrial therapy.

Patient D2 received one EST during the 15th experimental week and one weekly from the 17th through the 21st weeks. Immediately following this treatment he became less active and seemed to feign the illness which had occurred after his first series of EST. Periods of hyperactivity ensued when the patient sought to gain attention. On two occasions he defecated on the floor of the dining room, and once he overturned an elderly patient sitting in a wheelchair. When placed in 10 minutes' seclusion for this latter act, D2 realized that he was "a naughty boy". His appetite gradually improved, as did his speech which was now more clearly enunciated. Toward the end of the demonstration period he reverted to gesturing with his feet and hands. During group psychotherapy there were five occasions when the patient seemed to have some insight into his behavior. At the termination of the project he was not considered capable of adjusting adequately on this open ward with fully privileged patients. Hence he was transferred to another open ward with long-term patients at a lower level of adjustment.

Patient D3 had regressed by the 15th experimental week although he did continue to show some active participation in corrective therapy. He became manneristic and asocial once more. One EST was administered weekly from the 17th through the 21st weeks. After this D3 spoke more freely although the topic of "free masons" dominated his speech. He began to participate minimally in music therapy and responded well to a sodium amytal interview. Improvement was now accelerated. He participated in occupational therapy, rolling bandages. He often seemed to smile to personnel in a semi-concealed fashion. He bought an item in the canteen for the very first time, became more friendly with personnel, and even accepted food from women such as Red Cross workers. Never before had he done the latter. In group psychotherapy the patient enjoyed the attention given him, even when teased about the masons. Toward the end of the demonstration period the group leader attacked his "free masonry" defense. The patient immediately reverted to his earlier behavior, refusing to speak or to make his bed, and finally refusing to participate even in corrective therapy after receiving an accidental but minimal blow to the head by a basketball. At the completion of the demonstration project, D3's behavior was not deemed feasible for a privilege card, and he was placed on an open ward with non-privileged chronic patients.

Patient D4 received no further EST. He was given a full privilege card and accompanied other patients to the canteen, accepting responsibility for them. He formed a very positive relationship with two other demonstration patients, daily taking them to the canteen and supervising their purchases. He continued to refuse off-station trips, offering the poor fit of his clothes as excuse. When his clothes were replaced, he still refused to go. In occupational therapy he limited his participation to the modeling of clay. All his creations contained symbolic

sexual content. Despite the fact that he had a privilege card he refused to eat in a dining room reserved for privileged patients. He continued to eat with the group in its dining room on a locked ward, saying that he wished to do whatever the group did. Patient avoided the common day room, preferring to sit alone in his own room. He preferred to associate with personnel rather than with patients. Music therapy continued to disturb him, and he sought excuses to stay away from it. After much persuasion he finally did go on an off-station trip to the ball park but embarrassed personnel and patients by shouting about "saltpeter". Patient sought to release aggression in group psychotherapy and thus appeared hostile during these sessions whereas he was quite passive and submissive to personnel in all other activities. He now talked of his abnormal thoughts as "imagination". On one occasion he remarked to an aide, "that stuff (hallucinations) doesn't go down here." Patient adopted an authoritative role with other patients of the group and became a "leader". At the end of the demonstration project the patient seemed to have stabilized at a much improved level of adjustment. He was maintained on privileged status, moved into a smaller room on the open ward, and given an assignment in industrial therapy.

Patient D5 received two EST each during the 15th and 16th experimental weeks. He himself asked for EST, apparently recognizing the fact that he was doing poorly. After treatment the patient became somewhat euphoric, but this seemed to mask deeper depressive feelings. Later he asked for and received a privilege card. He looked forward very much to off-station trips and was assigned as a helper in occupational therapy. D5 improved greatly and became a leader in the group. He was well accepted by the younger neurotic patients on the ward and played cards with them. He often missed group therapy so that he could go swimming and play baseball with other patients. This was taken as a positive sign. Patient was moved into a two-bed room with one of the non-demonstration patients on the ward. He seemed to dissociate himself from the demonstration group, seeking association with the younger men on the ward. Since he expressed a desire to have a vacation, his family arranged to have him spend two weeks in a boarding home in the country. In anticipation of the trip the patient requested and wore his own clothes about the hospital. Often he talked of his desire to leave the hospital. Then, after a long period of waiting to hear from his family the patient began to regress. This terminated in almost total regression when word was received from his family that he would not be given a vacation after all. He perceived this as emphatic rejection and resumed his silly, hebephrenic pre-experimental status, alternating with depressive periods. At the termination of the demonstration project the patient was again recommended for EST.

Patient D6 received one EST at the 17th week, two during the 18th week, and one during the 19th, 20th, and 21st weeks, respectively. He was little changed. He did begin to participate minimally in the music rhythm group. He also attempted to speak, which came out as a mumble, and one relative reported that the patient did speak a word or two. Toward the end of the demonstration period he became somewhat more alert and for a period seemed to be smiling a good deal. He got along without his wheelchair but continually had to be reminded to participate in activities and required considerable attention. After the demonstration project he was not adjudged feasible for this ward. Hence, he was placed on an open ward together with nonprivileged chronic patients.

Patient D7 received two EST during the 19th week and one each during the 20th and 21st weeks. He was transferred for a short period to an infirmary ward for treatment of his legs and was cooperative while there. Following one EST the patient had spoken briefly but maintained his catatonic stance. At the 19th week the patient entered into a period of passive-aggressive behavior. In the 23rd experimental week he became seriously ill and was transferred to an infirmary ward where he expired a few days later. Diagnosis was myocardial infarction, bronchial pneumonia, arteriosclerotic heart disease. The patient seemed to recognize the seriousness of his illness and even spoke briefly to the nurses

who attended him. After his death it was hypothesized that he had suffered the first of two possible myocardial infarcts two weeks earlier.

Patient D8 received one EST weekly from the 18th through the 21st weeks. He seemed to improve a good deal although his speech was still minimal and limited to an outburst in which he swore. He went to the canteen accompanied by a privileged patient in the demonstration group, but he remained slow and a feeding problem. Unless constantly reminded to eat the food in front of him, patient would stop eating. He did not respond during a sodium amytal interview. He continued to swear, as in his early behavior. He enjoyed music therapy, learned one song, and became adept at drumming. On at least one occasion the patient was reported to have arisen by himself in the morning, dressed himself, and made his bed. At the close of the demonstration project he was not deemed sufficiently improved to receive a privilege card and was therefore placed on an open ward with non-privileged patients.

Patient D9 received no additional EST. Because of his improvement, and since he was doing so well as assistant to the recreation sports department, this patient was discontinued from active demonstration group therapy. He effected an adjustment level far superior to that of all other patients in the group. He now felt nothing in common with them. He was reassigned to a psychotherapeutic group composed of younger, more acute patients. Patient reacted rather adversely to this new group therapy and was soon discontinued. He was visited later by his sister and had a pleasant time with her despite her refusal to arrange a leave or accept any responsibility for him. Personnel were surprised to note no regression in the patient's behavior after this visit. He continued to have privileges, lived in a two-bed room with one of the younger patients, and worked on his industrial therapy assignment. He became an indispensable member of the recreation sports department and was voted "Patient of the Week" by the hospital newspaper. He maintained his excellent adjustment and made frequent off-station trips. He wore his own clothes rather than the hospital issue. Patient complained about numerous physical symptoms, none of which he had mentioned when he was mentally ill. He was generous in gifts to the staff, purchasing cigarettes and tobacco for them, and was eager to form friendship with staff members. Patient became concerned about money and about the fact that he would have no job when he left the hospital. At his own request he was given a 3-day pass to visit New York. He traveled by himself, stayed in a hotel, and visited his family and old business acquaintances. He returned to the hospital quite buoyant and enthusiastic. Patient then requested frequent Saturday or Sunday passes and utilized them well. At termination of the demonstration project he was continued on the same open privileged ward.

Patient D10 received two EST during the 15th week, three during the 16th and one during the 17th and 18th weeks. EST tended to slow the patient. While on EST he ceased his pacing and aggression but soon reverted to his earlier behavior—turning himself around and swearing, alternating with weeping and feeling quite sinful and religious. Once he tried to obtain his clothing and elope. After the EST series the patient was generally quiet. He seemed to have difficulty in determining whether to respond to his hallucinations or to the reality situation about him. His abusive language was held in abeyance except when he was frustrated in his demands for cigarettes. The patient proceeded very well in occupational therapy despite occasional hallucinations. He showed good acceptance of group psychotherapy. Toward the end of the experiment he seemed to regress. Although he no longer removed his clothing nor turned about the furniture, he still demanded cigarettes and on a number of occasions tried to steal them. At the conclusion of this study he was not adjudged feasible for an open ward because of his frequently explosive behavior.

Control Group (C)

Patient C1 was essentially unchanged at the completion of the project. He continued to pace and was verbally aggressive and uncooperative.

Patient C2 continued to be verbally abusive, uncooperative, delusional, and hallucinative. He accused all doctors of being poisoners and said that he "burns them all up." He re-

mained unchanged throughout the experimental period.

Patient C3 engaged in episodic outbursts of profanity and abusive language. Hebephrenic actions continued to characterize his behavior. At the conclusion of the project he still manifested this general type of behavior.

Patient C4. At the fourth month, ward nurse reported "better response to verbal stimuli, will react favorably to persuasive approach for treatment." Thereafter he displayed somewhat hyperactive and verbally abusive behavior. He refused medical care and was noted to be hallucinary, pacing, and hyperactive. Seclusive and belligerent behavior were later emphasized. At the conclusion of the demonstration project the patient continued to manifest frequent outbursts of abusive language and was uncooperative with ward routine.

Patient C5. During the fourth month his ward nurse reported that he "appears more seclusive, grouchy, and lately assaultive toward himself." At the end of the demonstration period it was noted that the patient had become increasingly uncooperative toward routine and was assaultive. During the last weeks of the project he hallucinated continually. He struck himself on the left breast frequently and continued to shake his head from side to side.

Patient C6 remained withdrawn and seclusive except for aggressive periods when he threatened other patients. He was assaultive toward personnel during the 19th experimental week.

Patient C7. At the fourth experimental month the patient was more responsive to verbal stimulation, occasionally answering questions or conversing with personnel. At five months the ward nurse noted "patient can now be engaged in short conversations, will laugh when kidded and frequently talks about other patients on the ward." Patient then regressed somewhat, on one occasion moving furniture about the ward in an aggressive manner. At termination of the demonstration he was essentially unchanged from his initial status. He continued to pace about the ward, picking up small bits of paper and dirt. Occasionally he engaged in agressive episodes.

Patient C8 was twice transferred to the infirmary ward for fungus infection. During the 20th week he was transferred to an open ward where both privileged and non-privileged patients resided. There he adjusted well although he remained at his bed most of the time. When spoken to by personnel the patient became rather upset, stating that he was here for treatment and wanted to be left alone.

Patient C9. During the fifth experimental month this patient answered questions in a limited manner and seemed to become more aware of his surroundings. However, he continued to sit by himself most of the time while smiling to himself. No essential improvement in status occurred.

Patient C10. During the 20th experimental week this patient, who had been adjusting quite well to an open ward, was requested to take blood sugar tests. He protested violently and then chose to remain angry with everybody, refusing to eat. He was transferred to a locked ward because of his totally uncooperative behavior; there he remained resistive. The question of a possible alteration in his consciousness was raised, and he was therefore transferred to an infirmary ward for evaluation. Results were negative; he was returned to the locked ward where he now showed better adjustment. No longer was he hostile, hyperactive or agitated. His adjustment to this ward being good, he was asked whether he wished to return to an open ward. This he refused. Six days after termination of the experiment patient was transferred to an open ward and later given his privilege card.

Discussion

All trends previously reported for the first half of this project were carried forward and more deeply etched in by these subsequent developments. It was notable that the control group showed a tendency toward behavioral *deterioration* as measured by the Multidimensional Rating Scale. In decided contrast to this, all rating scales applied to the demonstration group reflected definite trends toward improvement of the latter.

Final individual interviews were conducted with the staff participants to ascertain their personal reactions to the demonstration program. It was made patent to us that staff morale remained high and that enthusiasm

for learning of treatment methods and heightening competence in same was undiminished at the sixth month. This experiment remained a high point in the hospital experience of all participants.

In our judgment this project did successfully demonstrate to the hospital community that older, chronic mental patients *can* be improved by the determined application of a modern and comprehensive treatment program. It contributed enormously to hospital-wide acceptance for the Neuropsychiatry Service's treatment and care program for the long-term patient. It also constituted a pilot program for the care and rehabilitation of the chronic patient within a general medical setting.

At the completion of this project, a similar program of service (non-experimental) was instituted on one ward with 47 chronic psychiatric patients holding a variety of diagnoses including chronic brain syndromes. The general ward atmosphere and approach were and are similar to those of the original demonstration program. This service program has been predicated upon the knowledge and experience derived from the demonstration project. It functions with a more limited staff but does constitute a central focus of learning and treatment. Its influence extends beyond the confines of the single ward, penetrating throughout the breadth of the Neuropsychiatry Service.

Qualitatively, three of the ten demonstration patients improved markedly. Adequate foster home or placement facilities would have permitted their discharge. Three improved moderately, becoming more cooperative in the hospital setting and gaining greater satisfaction from their daily lives. Four remained essentially unchanged, as did all ten control patients.

Summary

This was the completion report of a demonstration program designed to improve the behavioral adjustment of long-term schizophrenic patients. Results were presented for the period from the fifteenth experimental week to the final conclusion at 26 weeks. Three types of objective protocols were analyzed: the Behavioral Rating Scale (BRS), the Multidimensional Scale (MSRPP), and the Weekly Rating Scale (WRS). Demonstration and control patients were matched for age, chronicity, and socioeconomic status.

(a) *Behavioral Rating Scale.* Demonstration group remained significantly superior in behavioral and ward adjustment throughout the course of the experiment.

(b) *Multidimensional Rating Scale.* This revealed marked diversion between experimentals and controls as the demonstration progressed. Control group continued to show increasing psychopathology throughout the course of the experiment, while the mean psychopathological score for the demonstration group went consistently down. Hence, not only did the program cause a decrement in psychopathology for the demonstration patients, but it even reversed the normal degree of deterioration which was occurring for the control group.

(c) *Weekly Rating Scale.* Demonstration patients showed continued improvement throughout the full 26 weeks of the experiment. In contrast, control group showed no change in status from start to finish. The divergence between the two groups was patent.

Brief thumbnail sketches of qualitative developments for each patient were presented from the fifteenth week through the twenty-sixth week (completion of experiment). Control patients remained essentially unchanged whereas three demonstration patients showed marked improvement, three patients improved moderately, and four remained unchanged.

This program constituted a focus of learning for all participating personnel. Training experiences and a high state of morale were disseminated to the whole service. Although the *number* of patients participating in the project was small, the program's influence was widespread throughout the Psychiatric Service.

BIBLIOGRAPHY

1. Funk, I. C., Shatin, L., Freed, E. X., and Rockmore, L.: Somato-psychotherapeutic approach to long-term schizophrenic patients. *J. Nerv. & Ment. Dis., 121:* 423–437, 1955.
2. Lorr, M., Jenkins, R. L., and Holsopple, J. Q.: Multidimensional scale for rating psychiatric patients. *Veterans Administration Technical Bulletin,* TB-10-507, 1953.
3. Shatin, L., and Freed, E. X.: A behavioral rating scale for mental patients. *J. Ment. Sc., 101:* 644–653, 1955.

SCHIZOPHRENIA: A SURVEY OF THEORY AND PRACTICE

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I

An outstanding reason for failure to be able to evaluate properly a psychiatric condition is our traditional search for a single cause that would account for the condition. It is quite well established now that causes are multiple (even if a certain cause may be considered a major one); that there are no specific causes that will produce specific symptoms; and that there are no specific symptoms in psychiatry. In an attempt to remedy the situation, I advanced the concept of the *final common path* of the *total personality* (which is affectivity) as a starting point in investigation of a psychiatric condition (11).

Another step in the direction of proper evaluation of a psychiatric condition is the necessity to establish a clinical unit—a *Gestalt-Syndrome*—since at present a clinical syndrome is usually identifiable with a clinical diagnostic label, say general paresis, thus frequently assembling unrelated phenomena. One way to isolate such a clinical *Gestalt-Syndrome* is to apply the principles of Hughlings Jackson (21), namely to differentiate symptoms due to: 1) the falling out of function in part or as a whole, the result of injury to function of any kind (which are called "negative" symptoms) and 2) Symptoms due to "release from check" by impaired function (which are called "positive" symptoms). Attention is also called to symptoms which are due to efforts at reorganization of physiological and psychological mechanisms of unimpaired function which may be also present. Still another point to keep in mind is the necessity to evaluate the growth of a symptom so as to avoid mistakes in interpretation of a symptom. For instance, ideas of negation have the same basis as hypochondriasis because my studies have shown that it is the hypochondriacal organ in the past that may be denied in the present, etc.

In order to apply the foregoing to the problem of schizophrenia, a survey of our evolution of the concept of schizophrenia is essential. However, since the subject is vast, I shall touch here only upon salient points and proceed as follows:

Historically, the personality disorder known as schizophrenia has been known for a longer time than defined. The first reference to particular changes in affectivity in the patients, as we understand the changes now, may be traced to John Conolly of Hanwell Asylum in England who stated in his Croonian lectures in 1849 (to quote Noyes (32)): "Young persons not infrequently fall into a state resembling melancholia without any discoverable cause of sorrow, and certainly without any specific grief; they become indolent or pursue their usual occupations or recreations mechanically and without interest; the intellect, the affections, the passions, all seem inactive and deadened and the patients become utterly apathetic."

This observation of Conolly calls attention to a change in affectivity which is also emphasized by a number of writers as an outstanding feature in the clinical aspects of the problem, but with the exception of Bleuler (5), other writers allowed themselves to be side tracked by other manifestations of the problem. Remaining on purely clinical grounds we cannot fail to recognize the significance of affectivity as a common denominator for a number of psychiatric disorders inclusive of schizophrenia. (Reference is again made to the final common path of the total personality—affectivity.)

While Conolly did not label the condition to which he called attention, Morel (30), a Belgian psychiatrist, in 1860 described a similar situation which he labelled "dementia praecox." This label was first applied to a condition of a boy, age 14. The history of the case emphasizes that the boy's mother was insane, that the boy was of small stature but otherwise in good health and of better than average intelligence. The boy was allegedly despondent over the fact of being the smallest in his class and has shown a tendency to solitude. He developed hatred and homicidal ideas against his father. A kind of "stupidity"

replaced his former alertness. Morel considered, therefore, that he dealt with a form of precocious deterioration.

It is quite easy to identify the foregoing case with a certain case of schizophrenia of our times. The points emphasized by Morel are still valid today. There is the factor of *heredity* (mother insane); there is the *inferiority complex* (small stature); there is the *Oedipus complex* (hatred toward father). There is the over-all picture of changes of affectivity as observed from the times of Conolly to our days.

Another salient in the history of the development of our concept of schizophrenia is the contribution of Hecker on *hebephrenia* (pubertal mind) in 1871 (18). Hecker described his cases also as they may be described today. He called particular attention to the age of the onset which is adolescence and pointed out the superficiality of their feelings, differentiating the observed emotional tone from depression and melancholia (apparently in the way of Conolly). He pointed out the patient's aimless, objectionless mode of life which terminates quickly in "psychic enfeeblement".

A further step in the evolution of the concept of schizophrenia is the contribution of Kahlbaum in 1874 (22) on *catatonia* (loss of volitional control). Kahlbaum, as the other writers did, started out with differentiation of the condition from melancholia. He observed that the so-called *melancholia attonita* of his patients is marked by mutism, motionless and staring countenance which reaches the point of *cerea flexibilities* and *catalepsy*.

Kraepelin studies the problem diligently and followed up his cases for many years. He concluded in 1896 (26) that *hebephrenia* and *catatonia* belong to one and the same group—*dementia praecox*. He added two more clinical forms to the group of dementia praecox, namely the *paranoid* and the *simplex*. He considered the striking trait of the group to be a characteristic destruction of the internal associations of the psychic personality affecting particularly the affective and volitional spheres (in times of Kraepelin the *will* was regarded as a special faculty of the mind). Unfortunately, Kraepelin used as a yardstick of differentiation of *dementia praecox* from other "functional" disorders—deterioration. We still suffer from a hangover from it which handicaps progress.

Toward this end, I like to call attention to the psychological studies by Kendig and Richmond (25), showing conclusively that there is no deterioration in the usual sense of the word in schizophrenia. Psychiatric studies of an analytic character, as well as studies conducted with the help of *sodium amytal*, show that there is preservation of interpersonal relationship and activity of the mental processes in schizophrenia.

The foregoing older researches point obviously to the exclusive significance of affectivity in the process of schizophrenia. Recent research points in the same direction as observed by Hoskins (20): "It is in affective relationships that schizophrenia is most fundamentally manifested, and these rather than disorder of mentation should be the primary concern of psychiatrists."

II

A revolutionary step in understanding of the problem of dementia praecox was made by Bleuler. Bleuler has shown in 1911 that dementia praecox cases while having a chronic course or a progression in episodes may come to a standstill at any time. He proposed to substitute the term *dementia praecox* by the term *schizophrenia*. Bleuler differentiated *primary* and *secondary* symptoms of schizophrenia. The former manifest themselves in disturbances of *ideas* and *affect*, the latter cover other symptoms, such as *hallucinations*, *delusions*, etc. This attitude makes understanding of the patient easier since, as Bleuler pointed out further, it is the psychology of the individual that shapes the clinical picture.

In applying the principles of Hughlings Jackson to the approach of Bleuler, one may say that the *primary* and *secondary* phenomena of schizophrenia correspond to the "negative" and "positive" differentiation of clinical symptoms by Jackson. I believe that the *primary* symptoms are identifiable with the "negative" and that the *secondary* symptoms with the "positive". The "primary" or "negative" refers to changes in affectivity, such as apathy, silliness, etc. The "secondary" or "positive" refers to delusions, hallucinations and other compensatory and defense mechanisms which "shape the clinical picture".

In following up the growth of the process, we can see that the most striking trait in

development of schizophrenia is the fact that the individual who is usually known to be aloof, inclined to be dreaming, etc., in other words showing a schizoid makeup, becomes gradually more self-absorbed to the point of *autism*. The process shows marked changes in affectivity; the person becomes affectively rigid, dull, and otherwise inadequate. On the whole, we deal with a mental state which may be best labelled psychologically as *withdrawal*. There is also a physiological counterpart of the psychological withdrawal. It is manifested by reduction in responses of the individual to physiological stimuli. There is *hypoactivity* to *metabolic stimuli*, such as to thyroid hormone, to carbohydrates, etc., a hypofunction of the *central* and *vegetative nervous system*, as manifested in reaction to *epinephrine* or to *vestibular stimulation*, etc. The withdrawal may also be explained in terms of biological defense. Since the individual feels that he cannot cope with the requirements of the environment, he withdraws, akin to the animal who when feeling sick attempts to hide, cuddled-up in a corner, to be undisturbed and thus recover. We do the same in physical illness by assuming an "intrauterine" position under the blankets which requires little expenditure of energy, thus helping the cure. The schizophrenic process is particularly rich with demonstration of such defenses, as we shall see presently.

In the analytical sense withdrawal implies withdrawal of libido from object relationship which makes the individual regress, depending upon the circumstances, to a lower level of functioning, such as the narcissistic, and to still lower libidinous infantile behavior. This will drive libido inwardly and toward phantasy. In the latter case the individual will be unable to distinguish phantasy from reality. In a general psychological sense the individual may regress to a primitive and archaic form of functioning.

III

To elaborate further on withdrawal, as an aspect of defense of the total personality, and to interpret the symptoms of the schizophrenic type of withdrawal in terms of defense, I like to call attention to the view of White (42) who considered *hebephrenia* the result of failure of defense, *catatonia* as the expression of a supreme effort to repress the conflict, and the *paranoid state* as an elaboration of the mechanism of projection as a defense. I share this view and see the condition as an attempt on the part of the individual to exonerate himself, or to find an excuse for his inability to cope with his own view upon himself in interpersonal and environmental relationships.

To continue with the attitude that withdrawal of affectivity is outstanding in the schizophrenic process, I would like to emphasize the following results of such withdrawal which are fundamental for the clinical picture of schizophrenia when fully developed.

Words and ideas are *Gestalten*. They are symbols of meaning on the background of affectivity which permeates them. In case of withdrawal of affectivity, words and ideas become mere verbalizations. There will be dissociation of affect from ideas and dissociation of ideas. This is what is emphasized as characteristic of schizophrenia, namely, the discrepancy between affect and ideas. However, the situation is not always that way. In case of extreme autistic thinking, such as believing that one is Jesus Christ, there will be an accompanying feeling of bliss; thus, affect and idea will be in harmony, but the harmony of the *Gestalt* is bizarre (a condition usually passed over by texts). Since there are no words or ideas without an affective component, and since affectivity is essential in the mechanism of memory and recall, disturbance of affectivity may result in *incoherence* of thought, or in a *jargon*, or in a *word-salad*. Interesting examples of a disturbance of the stream of thought are the productions of a patient of mine that he is the Lt. Governor of the State, Police Commissioner, and Detective. At this time he was doing unskilled labor and apparently was satisfied. Such forms of thinking are basically due to dissociation, and as explained by Von Domerus (41) as a change from *logical* to *paralogical* thinking. The *paralogic* is based on the *logic* used by the patient that he was an active member in a political organization. Since this organization is able to nominate for, or help by appointment to a job, for my patient, who suffered from the said dissociation, the membership meant the all important link, and he has seen himself having all the jobs. The dissociation of affect and ideas is basic for the loss of judgment of the meaning of each job, etc. The with-

drawal of affect may further result in attachment of the schizophrenic to objects. He cannot separate himself from them, as demonstrated by the fact that such patients carry everything they may possess with them. Another expression of withdrawal of affectivity form the environment is the phantasy of world destruction. The world seems to crash around them.

The same phenomena may be explained on the descriptive level by regression of the schizophrenic from the ability of "abstract" way of thinking to a "concrete" one, as emphasized by Goldstein (17). Because of such regression, the patient becomes unable to form a plan of action. He shows regression from the ability to pursue a goal in the form of progression of thought and action to a more primitive state of imagery, namely, agglutination. (Refer to Kretschmer's differentiation of evolution of imagery through the stages of agglutination, symmetry and style (27).) The same mechanisms are further seen in *neologisms*, new coined words by the schizophrenic. In the latter case there is fusion of words, concepts, symbols, etc., due to dissociation of affect and ideas. Another outstanding clinical phenomenon due to primary disturbance of affectivity is *blocking*. The disturbance of affectivity may also explain disturbance of motility such as *stereotypy*.

The foregoing traits of disorganization of the personality may not be seen in all cases of schizophrenia. Therefore, apparently the argument is raised that only those cases should be labelled dementia praecox who show severe disorganization of personality; the others should be labelled schizophrenia. I believe that the argument is the result of the mentioned hangover arising from the application of the yardstick of prognosis by Kraepelin. A similar argument in favor of separating dementia praecox from schizophrenia is made by some in applying another yardstick, namely, the response to shock treatment. Since we do not know of the exact mechanism of the cure in shock therapy, it is obviously inadequate to apply such an unknown quantity as a measure. For the present it is best to consider the situation on medical grounds of evaluation of the clinical picture. Like any other condition schizophrenia may run an *acute* or *sub-acute* or *chronic*, or *abortive* course. In doing so we are on safer grounds.

IV

The next question is to what is the disturbance of affectivity in schizophrenia due, or what are the causes? In other words, we want to know its etiology. It is obvious that the causes are multiple. Bellak (4) has thoroughly reviewed the recent literature on the subject and discussed the *anatomical*, *biochemical*, *endocrine*, *infectious*, *physiological*, *psychological* and *miscellaneous* causes. I shall review a few of the older and the more recent findings. To begin with, Kraepelin considered the cause of dementia praecox to be a metabolic and toxic one. Mott and others elaborate on pathology of sex glands. Bleuler considered schizophrenia to be due to an organic process of the brain. Hechst found pathology in the third and fifth layers of the cortex (it calls to mind that the third layer is instrumental in association and the fifth in efference). On the other hand, Dunlap denied the findings of the brain of schizophrenics as significant at all.

In recent years Rupp and Williams emphasized the loss of cortical neuronal elements, cellular changes and reactive gliosis. Winkelman and Book found moderate gliosis without inflammation at the site of chromatolysis of neuronal cells. Papez (36) studied sections taken during *gyrectomy* in five schizophrenics. He described inclosed bodies and degenerative changes in the nerve cells of Brodman areas 9 and 10, particularly in the layers 3, 4 and 5 of the cortex. Mettler (29) speaks of dysfunction of the striatum which causes disorder of perception. On the whole, one may agree with Spielmeyer (40) that there are no specific neuropathological findings in schizophrenia; nevertheless, the changes are significant. One may further conclude that the lesions may be secondary. Still once present they need evaluation, and may be indicative for research in therapy, as shall be suggested later.

Nielsen and Thompson (31) attempt to correlate clinical manifestations of schizophrenia with brain activity. They believe that the early manifestation of schizophrenia, such as apathy, etc., is due to diencephalic disorganization; transcortical association is used as much as possible rather than cortico-

diencephalic-cortical ones. The association areas suffer more and more, which accounts for the progress of the clinical phenomena. Gellhorn (15) asserts that diminished sympathetico-adrenal reactivity plays a central role in schizophrenia, being in agreement with other investigators that disturbance of autonomic centers is at the heart of the matter. Moreover, Gellhorn sees in schizophrenia a disturbance of hypothalmic-cortical relationship. Toward this end I would like to mention Hoskin's view that the endocrine system of the schizophrenic is defective.

The biological study of Ashby (2) is of interest. This study refers to the importance of the enzymes in brain metabolism. Ashby reasons that since adverse experiences may precipitate mental illness, it seems possible that massive stimulation caused by psychic trauma on an unstable enzyme pattern may call forth neuronal discharges responsible for psychotic phenomena. (It is assumed that patterns of brain enzymes are important in mental activity.)

V

To elaborate further on the etiology, nature and release of schizophrenia, I would like to call attention to the fact that the multiple factors operating in the process reflect upon and influence each other. The factors may be differentiated as follows: 1) factors belonging to the development and integration of the total personality; 2) factors involved in the maintenance of the equilibrium of the totality and belonging to its system of the defense; and 3) factors of precipitating and aggravating value.

In speaking of the first category of factors one must account for the role of heredity in development of the individual with the understanding that heredity and environment are not antithetic, but both operative in the moulding of the personality. Moreover, we have to appreciate that medical genetics at present does not know anything specific about the manner of inheritance of schizophrenia. Still, I would like to call attention to the work of Rosanoff *et al.*, regarding schizophrenia in twins. Rosanoff (38) concludes that heredity seems to play an important role in the etiology of schizophrenia. According to him, however, hereditary factors are often inadequate to produce schizophrenia and that hereditary factors are not always present; therefore, they are not essential in the etiology of schizophrenia. On the other hand, Kallman (24) believes that there is a specific genetic factor responsible for the schizophrenic response to stimuli. I share the view with others that Kallman overstated his case since his investigation does not supply reliable information for assessing the genetic basis of schizophrenia (37). Also I rather share the view of Rosanoff. It is important to understand that inheritance may concern vulnerability of structures of the organism. Toward this end I would like to emphasize the vulnerability of the *reticulo-endothelial* system in schizophrenia (10). Continuing with the factors operative in development and integration, one must answer the question of the relationship of the seclusive, shut-in, schizoid, etc., makeup of the schizophrenic to the process of schizophrenia. Bellak, commenting on the subject, brings out the theories of Sheldon regarding the *endomorph*, *mesomorph* and *ectomorph* constitution which correspond with Kretschmer's *pyknic*, *athletic* and *asthenic-leptosome* makeup. Bellak and Holt studied 50 cases of *dementia praecox* and a control group of cases of *general paresis*. They found that both groups showed similar findings with reference to *ectomorphy*. Bellak and Holt admit difficulties in interpretation of the findings. It is possible that if the *paretics* would not have *lues*, they would have developed a mental condition anyway since *lues*, although essential, is definitely not the sole competent producing cause of *paresis*; moreover, the *paretic* shows a variety of clinical forms among which one sees schizophrenic-like pictures. I consider the latter a variant of the fundamental schizophrenic syndrome. (See special works by the writer.) If this is correct, then one may conclude that we deal in schizophrenia, as well as in *general paresis*, with an inferiority, or inadequacy, or vulnerability of the central nervous system. Considering the usual habitus of the schizophrenic, as well as such findings as aplasia of the circulatory system (28) and similar findings referable to the other levels of the total personality of the schizophrenic, one may further conclude that we deal in schizophrenia with

a biological inferiority not only of the central nervous system but also of other personality levels, such as the mentioned *reticulo-endothelium*, which may be hereditory, congenital, or acquired in early life. If the assumption is correct, one may accept the view of Adler that the inferiority demands compensation which will be sought on both psychological and physiological levels. The question, when does such efforts of compensation begin, must be answered thus: that it is concomitant with the process of the onset of inferiority of the respective level, and that it begins as an early unconscious phenomenon. The compensation on the psychological level will express itself in the search for greater security of basic affective needs of the individual, in the sense of Linton, such as the needs of companionship, security, recognition, etc. Consequently, there will be greater investment of affectivity, libido, energy, call it what you wish, in the first companionship—the mother, the source of all security—as compared with the average case. Taking into account the role of the mother in the situation, one may readily see what may become of the need of libido investment if the mother should be insecure, unstable, hostile, schizoid, etc. (Mother-child relationship is not to be considered the sole cause.) The frustration will aggravate the biological inferiority, and the needs of the child might be driven to unlimited heights. Other phases of psychological growth will be influenced by the original drive for compensation. (While this may also be operative in the psychoneurotic, the latter does not have the inferiorities as strongly presented; moreover, the defenses of the psychoneurotic are different.) It follows that under the influence of the foregoing state of affairs, an inadequate relationship of the organism with his environment will result. There will be inadequate investment of libido in objects of the outer world. The libido will be driven inwardly and toward phantasy. Phantasy will substitute action. There will be indulgence in day-dreaming; ultimately, mentation will resemble a dream-like state (hypnoidal). The expression of the dream-like state will depend upon the resources of the individual, be primitive, or metaphysical, etc. The polarization of affectivity will cause greater and greater withdrawal of libido from other objects than one's self, and if not arrested will be demonstrated in the phenomena described as *primary* manifestations of schizophrenia. The *secondary* symptoms can easily be understood as release phenomena.

The degree of withdrawal is due, on the one hand, to the efforts of compensation (over-compensation) and is conditioned by the biological inferiority and rooted in the dynamic forces of the personality responsible for its unfolding. On the other hand, the degree of withdrawal depends also on the strength of the defense forces of the personality (second category of factors).

Ordinarily, we are more concerned with compensation on the psychological level. However, concomitantly with the psychic reaction there is also a reaction both to original biological inadequacy, as well as to stresses of life on the part of the physiology of the organism (the interrelationship of both levels forms a vicious cycle of activity). Regarding the physiological aspects of defense, I would like to emphasize the role of the *reticulo-endothelium* (10). I believe that I have given proof that the *reticulo-endothelial* system participates in both the release and cure of schizophrenia. Moreover, studies of brains of schizophrenics who died of "exhaustion" (8) have shown sparsity of brain capillaries. In summary, I have concluded that we deal in schizophrenia on the somatic level principally with a state of *capillary encephalopathy* and *capillary incretopathy*, although capillary inadequacies are also present in other organs. Olcon (33, 34), who thoroughly studied the capillary system in schizophrenia, concludes that the latter is associated with a defect of capillaries, that the severity of the disease is associated with the degree of derangement of the capillary structure.

The brain-and-organ capillaries do not respond to stress uniformly in the same way that arteriosclerosis does not affect necessarily the whole system or the whole of an organ. As far as the brain is concerned, in some instances the basal ganglia are more affected; in others cortical area may be more involved. This results in dissociation of various parts disrupting the cortical, subcortical, as well as intercortical activity. Considering again that for proper functioning the brain requires

continuous impregnation with biologicals "manufactured" at the periphery, disturbance of the *reticulo-endothelial* system which covers most vital organs and glands and participates in various aspects of the intermediate metabolism, we can understand how central function may be disturbed either in totality or partially by disturbance of the peripheral functions. My studies of the relationship of insulin therapy to the *reticulo-endothelial* system in schizophrenia show that there is always defense activity going on no matter how long the activity may be, which may partially explain variations in the degree of withdrawal.

To conclude, the foregoing account of the telencephalization of the somatic substratum in the process of the release of schizophrenia will constitute the interweaning medium of the *primary* (negative) signs of schizophrenia. As long as the changes remain on the functional physio (neuro) pathological level, a clinical remission may occur. If the condition shall progress to structural changes, the process will be irreversible.

Category 3 of factors refers to the role of various stresses in release.

To reiterate, the conclusions are not to be interpreted that schizophrenia is the outcome of an organic process of the brain in the "old" traditional view. The interpretation is psychosomatic with emphasis on the unity of function and its reaction to stress of whatever nature, particularly during early life. Since we emphasized the significance of the "primary" signs in schizophrenia and since we raised the question of the causes and nature of such manifestations, I would like to bring the discussed psychological and physiological phenomena in relation to expression of affectivity (emotions) in schizophrenia.

We are unable to identify the various nuances of expression of affectivity in physiological term, not even in the descriptive psychological way. Therefore, I can only draw a broad picture of the situation as follows:

According to Cannon (6) it is the thalamus which is excitable by different stimuli in emotion. The impulses are relayed to other parts of the diencephalon in a "downward" discharge activating viscera and the muscular system. Again there will be an "upward" discharge which is instrumental in "feeling" of the emotion. The "upward" discharge will decrease the inhibitory action of the cortex upon the thalamus and hypothalamus. Consider now the contribution of Papez (35) toward the problem of central mechanism of emotion, namely that the *hypothalamus*, the *anterior thalamic nuclei*, the *gyrus cinguli* and the *hippocampus*, which in turn are connected with all other parts of the brain by an extensive system of association, constitute a mechanism and the elaboration and participation in emotional expression. It is in these areas that the capillaries may be found particularly affected. The "downward" discharge will engage the sympathetico-adrenal and vago-insulin systems. Considering the relationship of the autonomic nervous system and the endocrines and the findings with regard to capillary insufficiency of the glands, I conclude that expression of affectivity will suffer due to the changes of the discussed levels. The question, which level of the total personality—the *reticulo-endothelial* or the *psychical*—is first and which is secondly involved, is a moot question. It is fair to assume that we deal in our cases with a vulnerability of the *circulatory* and the *reticulo-endothelial* systems, etc., levels which might offer the "disposition" to development of the condition (and which might be in some cases of hereditary origin) as discussed. However, the balance of the factors operative in the release, nature and precipitation of schizophrenia is in favor of the psychical level.

VI

With the foregoing in mind, I would like to account next for certain clinical and diagnostic aspects of schizophrenia. Attention is called to the instability of a form and to the transition of one form into another. Originally we differentiated the hebephrenic, the catatonic, the paranoid and the simple types. The modern classification enumerates further an acute and chronic undifferentiated type, a schizo-affective type, a residual and a pseudo-psychoneurotic type. The new types are descriptive and self-explanatory. However, how the "undifferentiated" types come about is by way of an admixture of symptoms in the sense of Hughlings Jackson, particularly to-

ward the end that the unimpaired parts compensate. Attention is again called to the course of the process, namely the *acute, subacute, chronic* or *abortive*. These states are undoubtedly rooted in the dynamics, strength, etc., of the system of defense.

Schizophrenia is observed among various ethnical groups and among both sexes with a slight margin in favor of the male sex. While schizophrenia is known in childhood (I have observed a case at the age of six), the usual age of onset is between the late teens and 30 years, with an increase around the age of 25. This, I believe, has relation to the process of maturity. However, schizophrenia may also appear later than 30 with an increase again in the involutional period. The majority of the cases begin gradually. About one-third have an acute or subacute course.

The adequacy of the diagnosis depends on the evaluation of the total clinical picture which includes anamnesis, mental and physical examination with the assistance of various special tests, as may be indicated. Above all it is essential to evaluate the "primary" signs of schizophrenia. However, as stated, the early case may offer difficulty in interpretation of "primary" signs. In fact, a good many cases start out as psychoneurotics; but with proper evaluation of the personality, the evaluation of chronology of development of the condition with the aid of such tests as Goldstein's and Vigotsky's for abstract and concrete behavior, and conceptual thinking as well as with the aid of a Rorschach test, etc., a proper diagnosis may be established.

As an example for guidance, I give the results of my review of 532 cases of schizophrenia who were continuous hospital residents from 1895 to 1931 (pre-shock era). Their ages ranged from 18 to 65. I personally examined the patients and their records. The summation of the review was presented to the Clinical Director who officially changed the diagnosis. The cases were: dementia praecox, paranoid type—215 cases; dementia praecox, hebephrenic type—85 cases; dementia praecox, catatonic type—79 cases; manic depressive psychosis—139 cases; episodic states (with mental deficiency and with psychopathic personality)—18 cases; paranoid conditions—6 cases.

Upon review it appeared that grossly only 30 per cent of the schizophrenia of this group remained approximately true to the type originally diagnosed. The rest showed at different times different reactions. In about 10 per cent of the cases hallucinations and delusional ideas faded out. They represented at the time of review a picture of the simple type.

At the time of review the following misdiagnoses as to type were seen:

Dementia praecox group: 25% of the paranoid type should have been diagnosed hebephrenia; 30% of the catatonic type should have been diagnosed hebephrenia; 75% of the "episodic states" were definitely schizophrenics; 100% of the paranoid conditions were schizophrenias.

Of the manic depressive group: eight were "chronic manics"; in six further cases the benefit of doubt could have been given. The rest were misdiagnosed and were cases of schizophrenia.

In evaluating staff discussions and comments upon presentation of the cases, the following reasons could be given for the misdiagnosis:

1. Neglect to consider "primary" signs and "withdrawal".
2. Overemphasis of the significance of certain personality traits.
3. Overemphasis of the setting in which the psychosis presumably occurred.
4. Depressive states at the time of onset of hebephrenia were misevaluated.

Particularly instructive was the review of Psychosis with Psychopathic Personality (episodes). The alleged recovery of the episode was in fact the first episode or an attempt at abortion of schizophrenia. At the next episode, the case was clearly one of schizophrenia.

Prognosis: About half of the group of patients have shown possibilities of maintaining themselves on an advanced occupational level. About one-third maintained a primitive occupational level. About 10 per cent led a vegetative existence; about 5 per cent were chronically disturbed.

Physically, the schizophrenic is usually of an asthenic or dysplastic habitus and vagotonic in reactions. However, fairly well-developed individuals are seen, and at times positive physically attractive people are met with. In so many instances a definite endocrine

status may be observed with preponderance of a hypopituitary type. As far as appearance goes, a very striking trait, important diagnostically, is the rapid loss of gracefulness by the young female or the rapid loss of agility by the young male. The muscles of the male are becoming rapidly flabby; the female loses her gracefulness of contour and movement. There is at times in the beginning considerable loss of weight with gain when the patient is better. Considerable gain of weight with no accompanying mental improvement is indicative of a poor prognosis, just as is the loss of attributes to youth, agility and gracefulness.

Physical examination usually does not demonstrate any pathology. The individual operates on the lower level of normalcy, whether it is at the circulatory, respiratory, G.I., or G.U. system. There may be physical complaints which are functional, particularly present in hebephrenic, which make the patient consult first a medical man.

Other usual findings are a low temperature, low blood pressure, slow pulse, low BMR, minor deviations in blood chemistry, etc. In the catatonic, we see postural edemas, cyanosis, etc. The female shows frequently menstrual disturbance.

Laboratory tests are insignificant. EEG shows no consistent findings, but abnormal rhythm may be observed. An interesting point in the course of schizophrenia is the finding of Gjessing (16) who showed that in the course of certain catatonics the level of nitrogen metabolism synchronized with the mental phases. Other writers emphasized the relationship of cholesterol to excitement. An increase of cholesterol in the blood goes along with reduction in excitment. I have found that there is a relationship of the blood volume and mental state in certain catatonics.

While the physical and laboratory findings are non-specific, they may contribute toward the differential diagnosis by the fact of their inconsistency, the latter adding certain coloring to the clinical picture.

VII

In this section I would like to comment on certain aspects of the course of schizophrenia (in addition to data already given in the preceding sections). Neither texts of psychiatry nor articles on the subject make much reference to prodromal signs in the course of development of the condition. On the other hand, observation and evaluation of prodromal signs are very important. I believe that such signs may be observed in all cases whether of insidious or of acute onset. Prodromal signs give hints to the psychosomatic aspects of symptoms as well as to their evolution. One may observe the following triad of prodromal signs: anxiety, fatigue and introspection (in any combination of, and in any order of sequence) which are basic for the development of somatic symptoms by the schizophrenic. The symptoms soon subside because of the mechanism of *homeostasis*. The latter is seeking and finding a new level. Regarding evolution of symptoms, for instance, one may follow up fatigue as giving rise to ideas of insufficiency, hypochondriasis, the neurasthenic complaint, etc. Anxiety may result in panic, be instrumental in psychosomatic states, etc. Introspection may lead to ideas of insufficiency, hypochondriasis, depersonalization, guilt, ideas of reference, influence, persecution, grandeur, hallucinations, etc. All symptoms do not have to be observed in all cases; neither do they have to follow in the given sequence. Some of the symptoms may occur prior of, or may be concomitant with, the crisis of affectivity.

Otherwise, there is the impression that texts on psychiatry are based principally on institutional practice. A more adequate approach is to be guided by more universal data, namely to take into account clinic patients as well as patients in private practice. In doing so, one may conclude grossly that perhaps 25 per cent of schizophrenia have an abortive course, another 10 per cent come to a permanent arrest, another 25 per cent have periodic remissions and recurrences, and the rest have an unfavorable course Among the latter, in the given reviewed material, we have seen that about one-half of the cases may settle down on an advanced occupational level, a further third may maintain a primitive occupational level, about 10 per cent may lead a vegetative existence, and the rest may be chronically disturbed. Of the latter a few may die due to "exhaustion from continuous excitement". This has been a rarity since

ECT therapy took root. As far as recoveries or remissions go, the catatonics offer the best material; next come the paranoids; a few of the hebephrenics remit, but none of the simple type recovers.

Of special interest is the process of aging in schizophrenia. I have studied the "biological time" or "inward time" of the patients. I wish to emphasize here the observation of Carrel (7) that we keep within ourselves the organic, humoral and psychological marks of all the events of our past: "... each thought, each action, each illness has definite consequences. ..." Contrary to chronological time, "inward" time has no uniform rate. For instance, one individual reaches puberty or involution earlier or later in chronological time. Following the footsteps of Carrel, Du Noüy (13) established a technique for measuring "biological time" based on the rate of reparation of damage to the organism, such as the healing of wounds (cicatrization). The healing is an individual, dynamic, psychosomatic process rooted in an inherent tendency of the organism toward regeneration. Du Noüy has shown that the phenomenon of cicatrization of surface wounds in man is a gradually declining process during the life of the individual. It reaches a low and constant rate at the end of life. The best measurable time is between the ages of 20 and 40. In studying healing of burns, cut wounds, etc., in the schizophrenic between the given ages, there was the impression that there was a drop of expression of indexes of cicatrization and constants of physiological activity in the schizophrenic as compared with the normal. It goes together with the mentioned loss of gracefulness and agility attributes of youth in the young schizophrenic. The investigation showed further that the aging of the schizophrenic between the ages of 20 to 40 is slower than in the normal. The normal shows more constant values; therefore, it may be that at 40 the schizophrenic may look either "older" or "younger" than his given age (significance of emotional expression to be considered). The cause for all this is not self-evident. One may consider that an increase in toxicity of serum (which is present in, schizophrenia) is a factor. But the toxicity should not be regarded as the cause of schizophrenia. It is probably the other way around, namely, that toxicity is due to disturbed metabolism which among other things is due in turn to disturbance of affectivity and impairment of the *reticulo-endothelial* system. Longevity does not appear to be affected by the schizophrenic process (slower aging may explain the chronological age at death).

Another aspect of aging of schizophrenics is the relative absence of evidence of a mental state which could be attributed to arteriosclerotic and senile changes of the brain. A fair number of the paranoid schizophrenics develop hypertension and hardening of the peripheral vessels or may have a "stroke", but there is no particular evidence of mental changes which could be attributed to cerebral arteriosclerosis. The schizophrenic ages, showing generalized senile changes, etc., but here again, there is no evidence of a psychiatric syndrome associated with senility in schizophrenia.

VIII

Treatment of a condition depends upon the state of our knowledge of the latter, particularly as to its etiology. However, even if the cause of a condition may be known, it does not follow that a cure may be on hand. On the other hand, empirical therapy has a definite place in medicine which applies also to psychiatry and consequently to schizophrenia. In practice one speaks of psychological and physiological therapies in schizophrenia. In life we deal with an integrated "ensemble" of both the psychological and physiological aspects of the totality manifested in both longitudinal and cross-section activity of the total personality. Consequently, a given form of therapy may influence any level of the totality. The early case of schizophrenia is a good subject for psychotherapy. The latter is employed on psychoanalytic principles with due regard to the personality of the patient. The therapy must be individual and must not be reduced to a technique; it must follow on lines which the patient is able to assimilate. Therapy must concern itself not only with libidinous but also with social and economic factors. Socialization which is one of the goals may be accomplished through the medium of recreational and similar activities. The value of occupational therapy

cannot be overemphasized as an adjunct or medium of psychotherapy, as well as an organizing and stabilizing factor. The course of treatment is necessarily long; the patient and his family must be made aware of this.

Since the schizophrenic, even the early one, by virtue of withdrawal is inclined to neglect his physical needs, proper presciption for such needs is not against psychotherapy, providing that care is taken that the patient should not expect a cure by physical elements. (In my experience the patient, if properly handled, will definitely give preference to psychology.) Thus, the therapy is, in so many instances, psychosomatic, even if emphasis is on the psychological. Above all, therapy for both the early and the chronic case must be guided by the principle of giving the patient a feeling of dignity and self-respect.

As far as the therapy of chronic cases goes, the choice of therapy depends on the preservation of the personality and the resources of the environment. Some patients may be treated in clinics, others at home, still others must be hospitalized. In all cases the treatment is both psychological and physiological. For instance, the use of drugs such as may be indicated (sedation, etc.), hydrotherapy, physiotherapy, recreational, occupational, social, and other re-educational measures must be employed.

The hospital therapy is at present oriented upon intensive and extensive shock and drug therapies. I must say without quibbling that I do not share the view of "vigorous therapy"; I believe in the necessity of artful handling of therapy. If there are no contraindications for shock treatment and the patient is inaccessible for psychotherapy, there should be no delay in the administration of shock therapy since it is well established that early cases respond best of all to treatment. The choice of shock, whether insulin, electric, or methrazol, depends on the merits of the case and the experience of the psychiatrist. Providing the diagnosis is clear, the catatonic may respond best to electric shock, while the paranoid and hebephrenic will do best with insulin shock. In so many instances a combination of shock is advisable. If the patient does not respond to treatment, repeated and extensive courses are not advisable. On the whole, shock therapy gives remission of various degree from seemingly complete recovery to various degrees of improvement. It allows about half of the treated patients to be released from the hospital. However, since statistical data at the present time are not uniformly collected, the given numbers are not of great value. One may say, however, that the shock therapies have increased the hospital turn over of patients with schizophrenia. The treatment obviously speeds up the process. Since about one-half of the successful cases return to the hospital, one can conclude that the treatment only speeds up the cure in patients who would also improve by other means, for instance, occupational therapy if properly applied. The value of the procedure is, however, not to be minimized in its research end. Regarding the mechanism of the cure of shock therapy, it is most likely that we deal with multiple factors again. Among these factors, improvement of function of the *reticulo-endothelial* system and the improvement in balance of the vegetative nervous system are important. Thorazine therapy must be considered principally a tranquilizing treatment, even if we occasionally observe a spectacular response in an individual case. However, the research value of the drug is considerable. The influence of Thorazine appears to be exercised upon cortical and subcortical levels, the thalamus, the hypothalamus, the basal ganglia, and the reticular formation. The drug has also a sympatheticolytic and adrenolytic action.

Brain surgery in schizophrenia is in the experimental stage, and it has greater research than therapeutic value. The following techniques have been principally used: 1) The original *prefrontal lobotomy* which attempts to sever as many frontothalamic connections as possible. The idea apparently is to separate affective elements from the integrated thought-action patterns. An undesirable result is that of blunting of the higher aspects of the totality of the personality organization as reflected in foresight, invention, creativity, etc. Also the operation seems to set up convulsive activity in some cases. 2) *Topectomy*, which is ablation of the superior surface of frontal lobes, is more exclusive, using the principles of localizations, and on the whole is less damaging to the higher levels of the personality. 3) Blind puncture of the tips of the frontal lobes which

is known as *transorbital lobotomy* and which causes the least damage, and 4) *Selective undercutting* of the cortex which is most promising of results since it is as the name suggests selective in an attempt to isolate greater fineness of localization. Fulton (14) concludes that *hypokinetic schizophrenics* should have a resection of the posterior orbital gyrus, or an interruption of its connections, while the *hyperkinetic schizophrenic* should have either a *cingulectomy* or *topectomy* involving areas *9* and *10*. In such operations there is no intellectual impairment.

So far the results are mediocre although striking results in individual cases have been observed. The therapy also has a better outlook in recent cases. What can be expected in chronic cases is improvement with reference to aggressive and destructive behavior. There is no help obtained for idleness, etc. Fatalities may be about 5 per cent. Therefore, in order to advise brain surgery in schizophrenia, the case must be proven resistive to other forms of treatment, be thoroughly worked up, and evaluated in consultation. This therapy must also be followed by psychotherapy and its adjuncts.

Summary and Conclusions

A survey of the problem of schizophrenia was made from the angle of the *final common path of the total personality* which is *affectivity*. It was thought that such an approach would help to isolate ultimately a *Gestalt-Syndrome* of schizophrenia and further help to disentangle the present global attitude toward schizophrenia.

Emphasis was placed on changes of affectivity as the "primary" signs of the process; a telencephalized somatic substratum for the changes was postulated. The "secondary" signs are "release" phenomena and can easily be understood in terms of defense mechanisms and compensations.

Attention was called to the significance of "prodromal" signs in the process of release of schizophrenia, as discussed.

Attention is further called to the participation of the *reticulo-endothelial* system in the cause as well as the cure of the process. While the etiological balance of the release of schizophrenia falls in the psychological field, the somatic aspects, as discussed, may explain certain "organic" aspects of schizophrenia; for instance, the disorganization of conceptual thinking. Goldstein has shown that the disturbance of the "abstract" in schizophrenia and organic states is similar. The dissimilarity lies in the fact that "the world of the schizophrenic is richer and more animated with personality ideas than the organic case." I found that in such cases of schizophrenia there is also disturbance of the relative constancy of the external environment, as discussed in a separate report (12).

The findings regarding the *reticulo-endothel* reflect on therapy. For instance, it has been established that insulin shock therapy influences favorably the capillary flow. This together with the findings regarding the benefit from Thorazine therapy would suggest a search for remedies that would reactivate the *reticulo-endothel* in schizophrenia.

Bibliography

1. Angyal, A., *et al.*: Physiologic aspects of schizophrenic withdrawal. *Arch. Neurol. & Psychiat., 44:* 621, 1940.
2. Ashby, W.: On the distribution of carbonic anhydrase in the cerebrum. *J. Biol. Chem., 156:* 331, 1944.
3. Ayd, F. J., Jr.: The physiologic and neurologic action of chlorpromazine. *Psychiat. Research Report, 1:* 14, 1955.
4. Bellak, L.: *Dementia Praecox.* New York: Grune & Stratton, 1947.
5. Bleuler, E.: *Dementia Praecox, or the Group of Schizophrenias.* New York: International Univ. Press, 1950.
6. Cannon, W. B.: *Bodily Changes in Hunger, Pain, Fear and Rage.* New York: D. Appleton & Co., 1929.
7. Carrel, A.: Physiological time. *Science, 74:* 618, 1931.
8. Davidson, G. M.: Cause of death in certain psychoses. *Am. J. Psychiat., 91:* 41, 1934.
9. Davidson, G. M.: Schizophrenia and manic depressive psychosis associated with pregnancy and childbirth. *Am. J. Psychiat., 92:* 1331, 1936.
10. Davidson, G. M.: Insulin therapy in schizophrenia and the reticulo-endothelial system. *J. Nerv. & Ment. Dis., 92:* 193, 1940.
11. Davidson, G. M.: The final common path of the total personality. *Psychiat. Quart., 18:* 459, 1945.
12. Davidson, G. M., and Wise, B. V.: The constancy of the external environment in schizophrenia. *J. Nerv. & Ment. Dis.* (In press).
13. Du Noüy, P. L.: *Biological Time.* New York: The Macmillan Co., 1937.
14. Fulton, J. F.: *Frontal Lobotomy and Affective Behavior.* New York: W. W. Norton & Co., 1951.
15. Gellhorn, E.: *Autonomic Regulation.* New York: Interscience Publ., 1943.
16. Gjessing, R.: *J. Ment. Sc., 84:* 605, 1948.

17. Goldstein, K.: *The Organism*. New York: American Book Co., 1939.
18. Hecker, E.: *Die Hebephrenie*. Berlin: Virchow's Archiv., 1871.
19. Hoch, P. H.: Progress in psychiatric therapies. *Am. J. Psychiat., 112:* 241, 1955.
20. Hoskins, R.: *Biology of Schizophrenia*. New York: W. W. Norton & Co., 1946.
21. Jackson, J. H.: *Selected Writings*. London: Hodder & Stoughton, 1932.
22. Kahlbaum, K.: *Die Katatonie oder das Spannungsirresein*. Berlin: A. Hirschwald, 1874.
23. Kalinowsky, L. B., and Hoch, P. H.: *Shock Treatments, Psychosurgery and other Somatic Treatments in Schizophrenia*. New York: Grune & Stratton, 1952.
24. Kallman, F. J.: The genetic theory of schizophrenia. *Am. J. Psychiat., 103:* 309, 1946.
25. Kendig, I., and Richmond, W. V.: *Psychological Studies in Dementia Praecox*. Ann Arbor, Mich.: Edwards Bros., 1940.
26. Kraepelin, E.: *Lehrbuch der Psychiatrie*. Leipzig: J. A. Barth, 1896.
27. Kretschmer, E.: *Textbook of Medical Psychology*. New York: Oxford Univ. Press, 1934.
28. Lewis, N. D. C.: *The Constitutional Factors in Dementia Praecox, with Particular Attention to the Circulatory System and to Some of the Endocrine Glands*. Washington, D. C.: Nervous and Mental Disease Publ. Co., 1923.
29. Mettler, F. A.: Perceptual capacity, functions of the corpus striatum and schizophrenia. *Psychiat. Quart., 29:* 89, 1955.
30. Morel, B. A.: *Traité des Maladies Mentales*. Paris: V. Masson, 1860.
31. Nielsen, J. M., and Thompson, G. N.: *The Engrammes of Psychiatry*. Springfield, Ill.: C. C. Thomas, 1949.
32. Noyes, A. P.: *Modern Clinical Psychiatry*. Philadelphia: W. B. Saunders Co., 1939.
33. Olcon, D. M.: Capillary structure in patients with schizophrenia. *Arch. Neurol. & Psychiat., 42:* 652, 1939.
34. Olcon, D. M.: *Essentials of Neuropsychiatry*. Philadelphia: Lea & Febiger, 1945.
35. Papez, J. W.: A proposed mechanism of emotion. *Arch. Neurol. & Psychiat., 38:* 725, 1937.
36. Papez, J. W.: Histological findings in 5 prefrontal gyrectomies. *Trans. Am. Neurol. A.*, p. 241, 1950.
37. Pastore, N.: The genetics of schizophrenia. *Psychol. Bull.*, July, 1949.
38. Rosanoff, A. J.: *Manual of Psychiatry*. New York: John Wiley & Sons, 1938.
39. Schmidt, H. E.: Contribution to the histopathology of insulin. *Am. J. Psychiat., 94:* 154, 1938, suppl.
40. Spielmeyer, W.: The problems of the anatomy of schizophrenia. *J. Nerv. & Ment. Dis., 72:* 241, 1930.
41. Von Domarus, E.: In *Language and Thought in Schizophrenia*. Ed. by Kasanin. Los Angeles: Univ. of Calif. Press, 1944.
42. White, W. A.: *Outlines of Psychiatry*. Washington, D. C.: Nervous and Mental Disease Publ. Co., 1929.

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THE SCHIZOPHRENIC'S SIBLING[1]

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DESIGN OF THE STUDY

The purpose of this study was to compare the early life experiences of schizophrenics with those of their healthy siblings of the same sex. Using an interview outline, histories were obtained from the mother, the schizophrenic patient, and from his or her mentally healthy sibling of the same sex, for each of 30 cases, making 90 interviews in all. Half of the patients were male, and half were female.

The criteria for selection required that: 1) The patients all had to be diagnosed clinically in staff conference at the New York Hospital-Westchester Division, as schizophrenic. 2) The mothers had to be emotionally stable and close participants in the childhood of the patients and siblings. 3) The siblings had to be emotionally stable, the same sex, close in age to the patients, and to have shared in the patient's childhood.

The question of stability was determined for both the mother and the sibling by these criteria: the subjects had never received any psychotherapy of any kind, had never been recommended to have such treatment, and had never thought it indicated for themselves. None of the originally selected mothers, siblings, or patients, refused cooperation with the interviews, so that bias from that source was excluded.

The nature of this experimental design excluded certain factors often attributed to the onset of schizophrenia. Because siblings formed the normal population for this study, the factor of family heredity was presumably controlled. The question of parental deprivation was controlled since this occurred simultaneously to both populations, although possibly without the same impact. Any differences found between the schizophrenic and his healthy sibling can be attributed to constitutional factors, to differences in personality *per se*, to differing parental attitudes toward the two children, or to different life experiences. It is very possible that the recall of mother, patient, and sibling, in these interviews, as well as in all clinical histories which have been used as the basis for personality and therapeutic theory, is influenced by the fact of illness, the guilt which such illness often arouses, the need to explain it, and the subject's own reaction to a psychiatric interview. The outline for the interview was followed by both authors, but the interviewing technique was as free as possible to elicit material. No conscious attempt was made to influence the mother's reporting. The authors rotated the interviewing so that any bias on the part of either author would be minimized.

The interview outlines were of two kinds: one for the mother, and one both for the patient and his sibling. The questions were correlated between these two forms of the interview so that in most instances corroboration of historical fact could be obtained or denied. This interviewing technique does not preclude bias on the part of the interviewer, influencing by the interviewer, or specific reactions to the interviewer on the part of the subject.

In handling the data obtained from these interviews, the questions were divided into five categories. These categories were: 1) disappointments; 2) personality; 3) attitudes; 4) family relationships; 5) recall. This paper covers the first two categories, namely disappointments and personality.

DESCRIPTION OF THE SAMPLE

The following statistical description applied to the 15 male and the 15 female schizophrenics who composed the experimental group in this study. The mean age of the 15 male patients was 25.0 and 24.6 for the females, with a combined range of 15 to 37 years. The siblings averaged one year younger than the patients. Four pairs of twins were in the sample, two of which were identical. The sibling order of the patients was well distributed as follows: 11 were the eldest, 12 were second children, 2 were third, 3 were fourth, 1 was fifth, and 1 was

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sixth. The mean size of the family was 2.3 children. Of the patient group, 4 were married, 24 were single, and 2 were divorced. There were 15 more siblings who had married, which indicated their higher marriage rate. Fifteen of the patients were subtyped as catatonic, 10 as paranoid, 1 as hebephrenic, and 4 as simple. The average length of illness, computed as the total number of months in all psychiatric hospitals at the time of interview, was 9.4 months with a range of 2 to 36 months. Therefore, these patients were seen in the acute stage of their illness and did not represent a deteriorated or chronic stage of schizophrenia. As for religious affiliation, 17 of the patients were Protestant, 10 were Hebrew and 3 were Roman Catholic. Five patients were considered of superior intelligence, 11 of above average, 12 of average intelligence and 2 of low average intelligence. No patient was considered to have an I.Q. of lower than one hundred. Because of their age, not all of the subjects had completed their education at the time of interview. The patients' educational attainments showed a wider range than that of the siblings who were concentrated at the high school or college level. Eighteen of the patients had completed college or better, as compared to 19 of the siblings. The economic status of these families was above average, and in 26 of these families, no economic deprivation could be claimed during the patients' or siblings' childhood. Concerning the factor of parental deprivation, eight marriages among the parents had been dissolved at the time of interview due to death, separation or divorce. There were five male patients and two female patients who suffered a loss of one parental figure prior to the onset of the illness, and all of these deprivations occurred in the 'teens. There was no instance of the loss of one or more parent figure in the childhood or youth of any of these patients. Of those 22 marriages that were still in existence at the time of interview, there were five which were not considered harmonious. In other words, 17 of the 30 marriages were stable and harmonious at the time of interview. The mothers' average age at the time of the patients' birth was 28 years for both the male and female patients, and at the time of interview, the mothers averaged 52 years of age for both groups. The fathers averaged 4.5 years older than the mothers.

From this description of the population used in the study, it can be seen that there were no significant differences which would affect the results. Although the population represents an above average one, economically and educationally, it is a fair sample of this hospital population. Therefore, the two groups of subjects, the experimental and control groups, appeared adequately matched for studying those differences which produce schizophrenia in one sibling, while leaving the other sibling mentally healthy.

Disappointments

Traumatic experiences in the nature of recalled disappointments were explored by asking the mothers: "As you look back on X's childhood, what do you think might have been some disappointments or upsetting times for X?" The replies were evaluated first from the standpoint of trauma which might be considered common to the total population, such as the death of a grandparent, or a move from one locality to another. The mothers reported 20 such common trauma for the patients, but only 10 for the siblings, suggesting that the patients reacted more severely to common trauma since such trauma must have occurred to the siblings as well. Uncommon traumatic experiences such as, "A member of the congregation offended him"; "he lost the sight of 1 eye" were reported for six patients and two siblings. What is striking is that the mothers reported *no* recollection of traumatic experiences for 18 siblings, compared with only 4 patients. Furthermore, the mothers remembered only 7 traumatic experiences which applied to both the patients and healthy siblings, whereas 10 other replies, such as the death of a beloved grandmother, should have involved both children.

These data strongly suggest that trauma was not limited to the pre-schizophrenic child but that the mother recalled his reaction and not that of his sibling. This may be due either to over-reaction on the part of the patient or to the mother's need to explain his illness in terms of past trauma.

The same type of question was asked of the schizophrenic patient and of his healthy sibling.

In *only* 12 instances did the children agree with their mothers' reports of disappointments, and they disagreed in 48 instances. Their replies indicated that the patients had undergone a much more marked reaction to such experiences than had their healthy siblings. The patients made such remarks as: "I had an ovary taken out, all a great problem", while the sibling said, for example: "I didn't feel handicapped because of the loss of one eye." *None* of the patients indicated that they had taken their disappointments in stride, whereas five of the siblings had done just this. On the other hand, only 11 siblings reported adverse reactions to their traumatic experiences, whereas 25 such adverse reactions were reported by the patients. Eleven of the siblings stated that they had reacted positively or neutrally to such trauma, but only two patients reported similarly. Typical patient responses were: "Everything dropped out from under me at 9"; "always disappointed throughout my life." Typical sibling responses were: "I came out of a shell at 12"; "I felt I had to learn something from my disappointments and that helped me"; "I guess I fought back"; "my parents didn't get along but I didn't have too many disappointments."

These reports by the siblings and patients reinforced the interpretation that it was the *reactions* which were different rather than the actual trauma. Furthermore, there is a lack of reliability in selective recall on the part of the mother which becomes important in evaluating data from an anamnesis for theoretical speculation. It opens to grave question the whole theory of trauma in producing schizophrenia.

To investigate physical health and physical trauma, the mother was asked for a detailed physical history of both children, and this question was rephrased for the patients and siblings to answer. The mothers cited more such trauma for their schizophrenic children than they did for their healthy children, but these responses required close evaluation. No significant difference appeared in the frequency of such common somatic complaints as allergies, urinary frequency, diarrhea, eczemas, etc. However, overconcern with health was cited seven times for the patient and not once for the sibling, which again indicates a difference in attitude or reaction. The mothers cited 10 more instances of mild or serious transitory illness for the patients than they did for the siblings but recalled about the same number of transitory and permanent physical handicaps for both children. These reports were essentially substantiated by the patients and the siblings. However, the patients qualified their answers with such remarks as: "I tired very easily"; "it's a wonder I didn't break down sooner"; "it was so futile to do anything about my acne." Some of the siblings, on the other hand, remarked: "I played sick as a child" or "I used my health to escape athletics."

Therefore, these data raise a real question of whether or not the pre-schizophrenic child actually underwent more severe or more frequent physical trauma than did his healthy sibling. However, there is evidence that his reaction and concern were demonstrably more severe, thus perhaps fixing such incidents in the mother's memory. The healthy sibling reacted less severely and more positively to physical illness and handicaps.

Personality

The mothers were asked: "What was X like when X was a little boy (girl)?" They were encouraged to answer this question at length. Their answers were analyzed to see if there were any major differences in personality between the schizophrenic and the healthy sibling. The first conclusion was that the pre-schizophrenic child, as observed within the limits of this study, could *not* be described generally as the quiet, contented child. The healthy female sibling was described by the mother as having been more independent, more emotionally aggressive, or more self-sufficient than the schizophrenic patient who, in turn, was described as more sensitive or requiring more attention. The same sort of difference appeared in the male subjects. Although more physically active than his female counterpart, the pre-schizophrenic male child was quieter and probably easier to manage than his brother, but also more serious or unsociable.

The conclusion from these data was that although physical activity in itself did not differentiate the schizophrenic from his healthy sibling, the social ability, independence,

and apparent happiness of the child's personality were significantly different. The healthy siblings were marked by a kind of emotional independence, as demonstrated by the following remarks from the mothers; "He got what he wanted"; "independent"; "he would leave his play-yard." Their mothers commented on their being out-going or contented, in contrast to their pre-schizophrenic siblings, who were described as: "sensitive"; "a sweetheart"; "easily upset"; "bashful"; "never a part of us"; "more serious"; "introspective"; "we always knew we had a problem."

The patient and sibling were also asked to answer a similar question. Their data substantiated the mothers' statements. Personality traits of independence (such as "rebellious, dare-devil, more defiant, fought back, knew my own mind") were mentioned by 10 siblings compared to five patients. On the other hand, dependent traits (such as "too easy to manage, scared, quiet, sensitive, it was safe to be good") were cited by 18 patients compared to only two siblings. It seems apparent then that if one imagines a continuum of independence, particularly emotional independence, one would find most of the healthy siblings at the independence end and most of the schizophrenics at the dependence end of the continuum. If one also constructed a continuum of happiness in personality, the healthy siblings would be found largely at the happiness end and the patients largely at the unhappiness end, according to their own statements about their childhood personalities.

The mothers were then asked to state what were the most pleasing traits of the subjects as youngsters, and their answers suggested that the schizophrenic patient, as a child, was pleasing to his mother as being "lovable, sweet, thoughtful," etc. The siblings, in contrast, seemed more dependable, but also more outgoing, more independent, and better able to stand on their own feet.

The mothers were also asked to mention something about these subjects as children that was not quite so pleasing, and their replies were quite disparate. However, if problems that represented an attempt on the part of the child to seek his own end, or to question parental authority, were all grouped together, there were eight siblings for whom such problems were mentioned as compared to only three patients. In contrast, if all the problems were grouped together that suggested passivity, dependence, or lethargy, there were 11 patients for whom such problems were mentioned as compared to only four siblings.

The mothers were also asked, "Whom did X take after?" There was a slight tendency for the mother to feel that the sibling, more than the patient, took after the mother or the mother's relatives. These data are not clear-cut but do raise the question about the common statement that mothers of schizophrenics tend to identify with their schizophrenic children. The evidence here would not support any such theory, but would in fact suggest that the mothers are more inclined to think that the schizophrenic child takes after the father, once the illness has been recognized.

"How was X different from your other children?" was another question asked the mothers. Here the healthy sibling showed more independent traits, a few more sociable traits, and a somewhat better disposition. The patients, according to their mothers' statements, showed more dependent characteristics, a somewhat unhappier disposition, and more placidity. The healthy sibling was said to be different from other siblings in the family because: "she was just a rock"; "she didn't care if others liked her"; "gave us an argument"; "did what she set out to do"; etc. The more dependent, less happy, more placid, personality of the patient was described as: "took things easier"; "wanted people to like her"; "always concerned with others' opinion"; "more influenced by people"; etc.

When the mothers were asked, "As X grew up, were there times when you were disappointed in X?" the patient group seemed to have been disappointing in terms of their social adjustment, such as "choice of friends"; "shyness"; "unhappiness"; "a problem child." When the mother expressed disappointment in the siblings, it was in reference to educational attainments or type of marriage. What was perhaps most significant was that the mothers expressed *no* disappointment for 13 siblings, and for only five patients.

The question of a change in personality is often cited with reference to schizophrenia. For that reason, the mothers were asked

this question: "How old was X when you noticed a change in X's personality?" Undesirable or negative personality changes were reported by the mothers for 26 patients but for only one sibling, and 22 were dated by the mother at a specific age or year. These mothers spoke of a pathological personality change occurring many years before the obvious symptoms. One mother said, "She was always different"; 3 patients were said to have had a pathological change in childhood (at 6, 9 and 10 years, respectively); 14 in adolescence, if adolescence is considered from 12–18 years; and 5 in adulthood. Since the average age of these patients was almost exactly 25 years, the mothers fixed the pathological change in personality many years before the frank psychosis, suggesting a very early onset. It must be remembered that these schizophrenic patients were acutely ill, recently hospitalized, and not a group which showed a long insidious onset, nor obvious symptomatology in childhood.

The healthy siblings were said to have changed also, but in a positive direction, or else no definite change occurred. As some of the mothers put it, "he developed but he didn't change"; "just forged right ahead"; "mellowed"; "grew up"; "she just took it." The healthy sibling showed a much more gradual personality change than did the patient, and it was a positive one marked by an increase in poise, independence, responsibility, understanding and socialization.

The incidents associated with the pathological change in the patient's personality are hard to see as traumatic incidents. They were more in the nature of natural events to which the patient reacted abnormally. These were typical of the events cited: "couldn't take teasing in high school (her sister did)"; "couldn't mix"; "lost confidence when put back in school"; "was refused a date"; "objected to competition"; etc. These data lead one to the conclusion that the schizophrenic patients had undergone a pathological personality change occurring many years before the acute onset of the illness, and in reaction to events which most children, or adolescents, experience. The positive growth cited for the healthy siblings was either gradual or in reaction to similar common experiences. It was the schizophrenic's *reaction* that was so markedly different.

Now to turn to the patients' and siblings' accounts of their own personality changes. They were asked the same question, "Do you think there was a time when your personality changed?" Their answers indicated a radical difference in attitude towards their own personality growth. The patients cited 14 negative changes, the siblings only one. The siblings, on the other hand, mentioned 21 positive changes, the patients only seven. Those patients who indicated that no change had occurred qualified with some negative statement, such as, "no, I wouldn't know"; "no, perhaps more introspective"; "always this way, I can't make up my own mind." The siblings qualified their answers with either a positive remark or with humor, as, for example: "No, I always felt I could handle anything"; "I'm still the same jerk I was"; "no, just gradually grown"; "no, still the same nice guy!"

As for the 14 negative changes cited by the patients, they were notable for the fear associated with them and the inability to adapt to common changes such as: "in high school I was scared of groups"; "at 13 I stayed home because I was afraid something would happen to my family"; "became scared and lost my confidence in high school"; etc. On the other hand, the 21 positive changes mentioned by the siblings often occurred in reaction to an unpleasant event or followed a period of maladjustment which they readily admitted. The healthy siblings reported that they reacted with a certain determination to overcome environmental changes, rather than being negatively affected by them. Their statements were characterized by such remarks as: "I was introverted in college but became extroverted in marriage"; "I was superconscientious but now I do as I think"; "I grew up at work"; "at 12 I began to reason and was better towards my mother"; "in college I came down to earth"; etc.

Another phase of personality development was investigated by this question which was asked of the mothers: "When X was a child, what did you think X would be like when X grew up?" The answers to this question were disappointing in that no discernible pattern emerged, due to their reported lack of concept

of the child's future. This may be defensiveness on the part of the mother against revealing her expectations for her children, which may, in turn, be a result of psychological sophistication.

In relation to the pre-psychotic personality of schizophrenics, it has been suggested often times that neurotic symptoms predominate. To answer this, the mothers were asked to reply to a check-list of the common nervous habits of childhood. Although the patients showed a few more nervous habits than did the siblings, the habits cited are not those that are often associated with the pre-schizophrenic child. The healthy siblings showed more instances of temper tantrums and of feeding problems, and an equal number of nail-biters. On the other hand, the pre-schizophrenic child exceeded in such habits as thumb-sucking, bed-wetting, crying, and nightmares. These differences were of questionable significance since they involved such small numbers.

When the patients and siblings were asked: "What nervous habits do you remember having?", their answers were at variance with the mothers' reports. No significant difference showed up regarding the types of nervous habits reported. However, the siblings reported quite a few more habits for themselves than were listed by their mothers. This may be because the mother was recalling the childhood of a son or daughter who had become mentally ill, and therefore she may have remembered nervous habits for them alone as an explanation for their illness.

When the mothers were asked, "In what way was X difficult to manage?", their answers suggested that the healthy siblings were a little more aggressive and a little less passive than their pre-schizophrenic brothers or sisters. The differences here were slight and only suggest a tendency.

The whole area of sexual adjustment, especially as it applies to the development of schizophrenia, is a difficult one in which to get reliable material. The mothers were asked for a sexual history on both children. The most striking result is the mothers' *lack* of such information, especially for the sibling. It is quite possible that the mothers were evading the question, but it is also possible that the siblings' sexual adjustment was such that it was not brought to the attention of the mother. The healthy siblings showed a greater interest in the opposite sex, whereas the patients showed more concern with sexual problems or demonstrated less interest in the opposite sex. The authors do not necessarily interpret these data to mean that the siblings had fewer sexual concerns, but only that whatever concerns they had were apparently less known to the mother.

When the patient and sibling were asked to comment on their own sexual adjustment, reports by the mother seem corroborated. The siblings showed considerably less concern, according to their own reports, whereas the patients reported feelings of being shy, scared or concerned such as: "I was scared of sex"; "I couldn't believe the truth"; "I felt guilty and afraid"; "I had a lot of fear and bewilderment." The healthy siblings' attitude toward sex was of a different quality, as indicated by these remarks: "after 23 I felt I didn't need to prove myself"; "I always was able to figure it out"; "I couldn't do without girls and went with the best"; "I like being married"; "always comfortable with girls"; "a neighbor tried to seduce me at 10 and I ran away and now I enjoy my boy friends"; "I've always liked boys."

As for the interests and hobbies that might differentiate the healthy sibling from the schizophrenic patient, the reports obtained do not support the notion that pre-schizophrenic youngsters tend to be more interested in the arts as opposed to sports since the figures for this were approximately equal. The only possibly significant difference was that the healthy siblings were reported as having more interests, or more enthusiastic ones, or more lasting interests.

Finally, the question was asked: "In what specific ways is X different today than when X was a child?" As the mothers saw it, there were 17 positive differences since childhood in the siblings, as opposed to only two in the patients. These positive differences were described as: "matured"; "more responsible"; "more ambitious"; "more thoughtful of others"; "more understanding"; "more independent"; "can take advice." On the other hand, there were 23 negative changes cited for the patient as opposed to only two for the siblings. The negative

changes were such as: "she's never grown up"; "selfish"; "more demanding"; "was always sensitive and is more so"; "less aware of other people's moods"; "now she isn't happy"; "as soon as anything is difficult for him he goes to bed"; etc.

The character of these personality differences suggests a certain pattern. For those changes which could be called an increase in responsibility or independence, there were 11 more reported for the siblings. For those changes which indicated increased self-involvement, sensitivity, or seriousness, there were 11 reported for the patients, but none for the siblings.

The siblings and the patients were asked to answer the same question, and the mothers' statements seemed to be verified as far as the healthy siblings were concerned. The positive changes reported by the patients were a little hard to evaluate since they did not necessarily represent a realistic approach to their own personalities. No sibling reported a change for the worse. The siblings' remarks on their own personalities proved of interest in that they reflected a willingness to look at themselves critically or with humor, that they had learned from past experiences, and that they felt that their growth had been in the direction of independence, responsibility, and increased social ease. Characteristic of sibling answers were: "I think of myself less"; "I'm on my own and can go my own way"; "I was immature and envious"; "I'm glad I have responsibilities and am willing to take them on"; "I have learned to solve my own problems"; etc. The patients, on the other hand, reported recent negative personality changes such as: "I am more confused by what I'll never get"; "I do more thinking than doing"; "I have mean streaks"; "I want to get away from life"; "my life may have been ruined"; "more is expected of me but I don't do it"; "it's less fun than it was as a child."

It is a little hard to evaluate the quality of positive changes that occurred in the healthy siblings, but in nearly every case the siblings reported changes that they thought had been badly needed. The female healthy siblings showed an increased independence of social opinion, more so than did their male counterparts, and this suggests that social opinion is a problem more specific to girls than it is to boys. But an increase in confidence and self-assurance, the ability to handle responsibility, the ability to stand on their own feet, and to meet others easily, certainly are a suggested pattern for the positive changes in the siblings' personalities.

Discussion

In summarizing these various items that refer to personality differences between the schizophrenic and his siblings, three major patterns seem to emerge. First, there is the whole matter of recall. All of these data raise the question whether or not the mother's recall is reliable once the illness has been recognized. The authors tend to think that much of the information the mother gave was an attempt on her part to explain the child's illness, and for that reason the mothers recalled more nervous habits and more sexual concerns about such children than they did about the healthy siblings.

The second pattern that emerged related to specific personality traits. These data did not support the idea that neurotic symptoms in childhood differentiated the pre-schizophrenic child from his healthy sibling, nor the idea that the pre-schizophrenic child showed more artistic interests than did the sibling. The only possible difference in interests and hobbies was that the healthy siblings had more, or more enthusiastic ones, which lasted longer.

Finally, and this is the major conclusion for this part of the study, the authors did find a real difference in personality and in its development, between the schizophrenic patient and his healthy sibling. The pre-schizophrenic child was described as more sensitive, less happy, and less social, than his healthy sibling who was, on the other hand, more sociable, more emotionally independent, and a happier child. The mothers found the siblings more dependable and outgoing, although often rebellious and therefore probably more trouble to them. Conversely, the patient was said to be a sweet and easy child, but also passive and dependent, which was of some concern to the mother. This pattern was corroborated when the siblings and patients were compared to other children in the family.

This basic personality, as it altered, changed

in different directions and in different degrees. The mothers reported negative personality changes occurring in the patients' childhood and adolescence. These changes did not seem to be reactions to trauma but more an adverse reaction to common experiences. In the meantime, the siblings apparently were undergoing a more gradual change toward responsibility, independence, and increased socialization. When the siblings experienced a reversal, their tendency was to overcome the obstacle or the personality defect as they saw it. As time went on, there was an apparent gradual maturing on the part of the healthy sibling toward more responsibility, independence, and social ease, whereas the patient became increasingly self-involved, sensitive, and serious.

As far as these data go, they suggest that the personality of the schizophrenic patient, as a child, was such that the mother might well have felt the need to protect it. The healthy sibling, in contrast, might well have fought off any attempt at domination or protection. This basic difference in personality seemed to extend far back into childhood. In those studies which have emphasized the overprotective role of the mother, it is quite possible that the special reactions of the child himself may have been overlooked. Such a relationship has probably been compounded of two personality reactions, with the pre-schizophrenic child dependent and desiring an unusual degree of support and attention to which the mother, in turn, has reacted. On the other hand, the healthy sibling may have shown a strong emotional independence from an early age and may not have allowed himself to be involved in such a relationship (1, 2, 3, 10).

This part of the study further suggests that the healthy sibling and the schizophrenic patient showed very different reactions to the common experiences of childhood, which raises the whole question of the nature of trauma and its etiological role. There is no evidence here that the schizophrenic patient suffered more psychic or physical trauma than did his sibling (11), but there is evidence that he reacted pathologically to ordinary changes. This, in turn, causes the authors to question findings that relate schizophrenia to trauma, unusual anxiety, or a rejecting mother, or to other types of maternal handling (8, 12, 13). Since the schizophrenic patient and his healthy sibling in this study were exposed to the same parental deprivation, there is no evidence to support the notion that parental deprivation in itself is a cause for schizophrenia (7).

These conclusions would support those studies which have indicated that schizophrenia is unrelated to external stresses or deprivations (6, 11). The personality of the pre-schizophrenic child, as shown by this part of the study, does suggest that the child may invite a special reaction from the parent which, in turn, reenforces pathology by producing a dependent and emotionally passive youngster who is unprepared to meet common stresses. This would confirm the findings of those ... studies (4, 5) where the schizophrenic child showed a definite qualitative difference dating back to infancy, and this difference was easily detected by the parents who reacted with overprotection. Such a child invites a close and protective relationship from his mother and wishes to perpetuate it.

Although this study does not attempt to explain why such differences in personality exist, it does raise the whole question of selective reaction to the environment, including parents. If the explanation for schizophrenia does not lie in the area of trauma, rejection, or in the pathological personality of the mother, but lies instead in the pathological reactions of the pre-schizophrenic child to his *ordinary* environment, then we must look for causes within the personality and the relationships it initiates and tries to maintain (9). If they are to be like their healthy siblings, the pre-schizophrenic children must be trained toward independence for themselves and from their environment. This, in turn, might suggest a radical change in therapeutic theory which has assumed that the illness has been a product of poor environmental influence, rather than an early pathological reaction to the environment on the part of the patient. A new kind of therapeutic approach may have to be considered which is dedicated to the strengthening of the personality through gradual exposure to stress, rather than searching for explanations in environmental influences. Such a therapeutic approach would have to be effective early in the lives of such pre-schizophrenic children in

order to prevent the increased sensitivity and self-involvement which apparently have heralded the onset of schizophrenia in the face of common stresses.

These results also raise grave questions about the reliability of recall now used as a basis for so much theory and therapy. The next parts of this study will attempt to deal with this problem of recall, of parental relationships, and of differences in attitudes between the schizophrenic patient and his healthy sibling.

BIBLIOGRAPHY

1. Clardy, E. R.: A study of the development and course of schizophrenia in children. *Psychiat. Quart. 25:* 81, 1951.
2. Freeman, R. V., and Grayson, H. M.: Maternal attitudes in schizophrenia. *J. Abnorm. & Social Psychol., 50:* 45, 1955.
3. Gerard, D. L., and Siegel, J.: The family background of schizophrenia. *Psychiat. Quart., 24:* 47, 1950.
4. Gurevitz, S.: The parents of the schizophrenic child. *Psychoanalysis, 2:* 36, 1954.
5. Kasanin, J., Knight, E., and Sage, P.: The parent-child relationship in schizophrenia. *J. Nerv. & Ment. Dis., 79:* 249, 1934.
6. Oltman, J. E., McGarry, J. J., and Friedman, S.: Parental deprivation and the "broken home" in dementia praecox and other mental diseases. *Am. J. Psychiat., 108:* 685, 1952.
7. Plank, R.: The family constellation of a group of schizophrenic patients. *Am. J. Orthopsychiat., 23:* 817, 1953.
8. Pollock, H. M., Malzberg, B., and Fuller, R. G.: *Hereditary and Environmental Factors in the Causation of Manic-Depressive Psychoses and Dementia Praecox.* Utica, N. Y.: State Hospitals Press, 1939.
9. Prout, C. T., and White, M. A.: A controlled study of personality relationships in mothers of schizophrenic male patients. *Am. J. Psychiat., 107:* 251, 1950.
10. Reichard, S., and Tillman, C.: Patterns of parent-child relationships in schizophrenia. *Psychiatry, 13:* 247, 1950.
11. Slimp, E.: Life experiences of schizophrenic children. *Smith College Studies in Social Work, 21:* 103, 1950.
12. Szalita-Pemow, A.: Remarks on pathogenesis and treatment of schizophrenia. *Psychiatry, 14:* 295, 1951.
13. Wahl, C. W.: Some antecedent factors in the family histories of 392 schizophrenics. *Am. J. Psychiat., 110:* 668, 1954.

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AN APPROACH TO NEUROTIC BEHAVIOR IN TERMS OF A THREE GENERATION FAMILY MODEL

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In a previous paper (4) we described a study of the communication of neurotic behavior patterns within families. This study involved fourteen families of two generations of kin and six families of three generations of kin.[3] The two generation families included mother, father, and one or more of their children, while the three generation families included in addition either a maternal or paternal grandparent. The various families were studied in the course of evaluating various of their members who had sought treatment from one of the present writers, a psychiatrist. Every family member was intensively interviewed, and usually at least one from each family was seen for individual or group psychotherapy. In addition, the Rorschach Ink Blot Test and the Thematic Apperception Test were administered to each. During the analysis of our data we found that any given family tends to be characterized by a distinguishing theme or problem area. Each family is marked by its somewhat unique struggle with a difficulty common to its members. Each family shares with the others an unusual concern with a given conflict. Thus, one family might be struggling principally with the problem of how to discharge aggressive feelings; another with the problem of controlling exhibitionistic impulses; and another with difficulties centering about wishes for unlimited passive gratification. We observed that each family could be classified in terms of its category of struggle. The fact that members of the same family were concerned with a common central problem was quite apparent in the clinical data. However, such overlapping of areas of concern among family members was especially clear in their projective test productions. Members of the same family gave remarkably similar test responses. Indeed, in most instances even the grandparent and grandchild in a given family would produce patterns of fantasy characterized by unusual similarity. We have since discovered that Morris and Nicholas (6) found just such similarity in the Rorschach records of family members whom they evaluated. We should like to emphasize the uniqueness of the data provided by analyzing data from two and three generations of family members. Such data eliminate much of the speculative element in determining the patient's feelings regarding his parental figures, the reality of his fantasies regarding them, and the general tradition in which he grew up.

On the basis of such data and a variety of studies of others (1, 7, 8) which have pointed up the basically parallel dynamics of members of the same family, we have derived some perspectives concerning neurotic behavior and its treatment. We have found it meaningful to perceive each individual who comes in for psychiatric treatment as a representative of his family group. We conceptualize that individual as having been the member of a group of persons, all of whom were trying in various ways to help themselves and to help the others to deal with some conflictual disturbing issue. When the individual comes to a therapist for help, we assume that he is admitting the failure of his group as an effective milieu in which to find the solution he seeks. Our data suggest that the individual seeking therapeutic help frequently approaches the therapist in protest against the ineffectiveness of the group to which he belongs. But also his behavior may be a response to conscious or unconscious pressures from the group members, all of whom sense their mutual ineffectiveness and desire an outside agent to bolster the group structure. Just as a given patient in a group therapy situation may be stimulated by the total group to express a feeling toward the therapist which the group as a

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whole cannot express, so may one family member be incited to obtain outside aid for the total group. Thus, when the patient establishes relationship with a therapist, he is in a sense recruiting him to membership in a specific group. It is, of course, well known that when an individual enters into psychotherapy, this has intense repercussions on those in his intimate circle. His relationships with his intimates may change and in turn their relationships with each other may shift. The therapist becomes a significant figure to these intimates and at different levels of reality is a new force which they must reckon with in their responses to each other and particularly toward the "patient". The therapist becomes a special kind of member of that group.

We now have clinical and projective test data which point up the spread of effect resulting from one of the group's members entering into therapy. We find that when patients have been in treatment for an extended period and show significant changes in their behavior and in their projective retest responses, their spouses who have not been directly in treatment also show significant changes in their behavior and projective retest responses. An important implication of our point of view is that actually a therapist is usually treating a group and not an individual. To some degree, the individual who comes for help is a fortuitous choice of the balance of forces in the group at a given time. We have repeatedly observed family groups in which first one member and then another member would find it necessary to obtain psychotherapy. It is not as if one member of a family were sick and the others well. On the contrary, we have found consistently that sick individuals come from sick groups and that as the group structure varies, different members of the group are subjected to shifts in their load of stress and consequently experience varying degrees of discomfort. Implicit in this formulation is the idea that the prognosis for an individual in therapy is to an important degree a function of how the group of which he is a member responds to the entrance of the therapist into the group structure. Does the group accept the therapist and is it able to utilize that which the "patient" gets from the therapist as a means for solving the basic group difficulty? Or does the group seal out the "patient" like a foreign body and refuse to allow him to introduce the therapist into the group structure? We have noted that the concept of individual ego strength is a considerable oversimplification. Each individual's ego strength should be evaluated relative to the support he derives from his intimate group membership. So often, now, we have observed individual patients who look very sick in terms of clinical and psychological test data when they are evaluated as isolated and separate personalities; but who function well within the context of the aid and support derived from their group membership. The work of Doane and his co-workers at McGill (2) has recently pointed up in dramatic fashion how fragile is any individual's ego strength when he is drastically separated from the opportunity for interaction with others. They found that normal individuals subjected to relatively brief periods of drastic isolation from most forms of sensory stimulation develop marked regressive tendencies, e.g., hallucinations and delusions. Ego strength is apparently a highly relative concept and can vary greatly as the individual's life situation changes and as his opportunities for certain kinds of interaction with others change.

In a limited sense, the idea of treating the group in which an individual has membership rather than simply treating the individual alone is already an underlying assumption of the treatment procedure in many child guidance clinics. Frequently in such clinics the problems of the child are attacked by treating not only the child but also his mother and in some instances also his father. The rationale behind this procedure is that the child is still so dependent upon his mother and father and so much controlled by their attitudes that even if he were to change some of his own attitudes in the therapy, he would not be able to express them in action against the resistance of the relatively powerful parental figures. Thus, changes have to be brought about in his family group before he is free to change. There has been little effort expended toward the extension of this principle to adult patients. It has somehow been assumed that

the adult patient's relationships with his family group are qualitatively different from those of the child and that these relationships may, by and large, be treated as peripheral to the basic therapist-patient interaction. Our observations indicate that patients who come for treatment are actually in the same dilemma as the child who enters therapy, the difference being only a matter of degree. The adult patient too may find that his efforts to change are paralyzed by the rigidity of his intimates. His own group may block him drastically. It is, of course, also capable of becoming a very helpful facilitative force. This group-oriented concept of the neurotic patient has stimulated one of the writers who is a psychiatrist to use a variety of techniques for involving not only the patient, but his whole family in the therapeutic process. Illustrative of such techniques is the placement of not only the "patient" but also simultaneously of other key members of his family in individual or group psychotherapy. One may cite, as further illustration, a technique which involves the calling together of all family members into formal group meetings where free interaction is encouraged and interpretations are made of some of the patterns characteristic of the group and the relationship of these patterns to the behavior of the "patient".

The whole approach to the patient as the representative of a disturbed group stands in opposition to the atomistic point of view frequently found among those who treat patients psychotherapeutically. Many patients are still viewed as though they were individual units whose goals, prognosis, and illness could be evaluated with only a superficial knowledge of the group matrix in which they live. We are taking the position that each patient should be viewed as a link in a long-term continuing historical process which involves a specific subculture. The patient is a product of group disorganization, and his difficulties may profitably be formulated in terms of the history of the group in which he lives. Various anthropologists, e.g., Jules Henry (5), have emphasized the importance of such an approach. Similarly, Eric Eriksen (3) exemplifies a psychoanalyst who has diligently sought to relate various sorts of pathology that he has observed in the United States to basic historical trends which have characterized the development of this country. Of course, others have also supported this type of approach. But what has been lacking in establishing the value of the approach is specific detailed documentation. It is well to say that the individual patient represents the outcome of certain kinds of group pathology, but it is quite another matter to establish the point with detailed data. It is our main objective in the present paper to present a variety of data concerning the characteristics and interactions of three generations of individuals belonging to a family cluster. Our aim is to show the continuities running through these three generations and to attempt to set up an illustrative model of how long-term group dynamics give rise to the pathology we finally see in the individual "patient".

Our analysis of the three generation family cluster involves two levels of data. First of all, we have intensive individual interviews with each member of this cluster and in two instances the records of individual therapy sessions. Secondly, we have Rorschach and Thematic Apperception data from each member. We will attempt to show how the data from these sources fall into a pattern indicative of a basic trend or continuity.

The family group in question first came under study when a young wife who was pregnant with a second child began to show severe symptoms of depression, feelings of futility, and an increasing inability to care for her husband and first child. The family cluster in which she had membership consisted of seven other persons. She and the others in this cluster may be categorized into three subgroups:

The patient	Patient's father	Patient's father	husband's
Her husband	Patient's mother	Patient's mother	husband's
Her child			

Before undertaking the analysis of this cluster it would be well to sketch some background facts concerning each subgroup. The patient and her husband have been married five years. They have a son four years of age. The husband has lived in the United States 15 years, having been born in a Jewish family in Poland.

He came to the United States at the age of 15. He has one brother and two sisters. He completed the seventh grade in school. Since the age of 15, he has worked with his father and brother in a wholesale meat packing business. The patient herself is from a Jewish family and is an only child. She was born in the United States and completed 12 years of school. She married at the age of 16.

The patient's parents were born in the United States. The mother completed high school, and the father completed six years of school. A good part of the father's work career has been tied up with running a retail grocery store. More recently, he sold his business and is employed as a clerk in a clothing store.

The parents of the patient's husband were both born in Poland. They fled Poland just before the Nazi invasion. They have had little or no formal education. The father was a butcher in Poland. When he came to the United States, he established and now owns a wholesale meat packing company. All of the above-mentioned subgroups live in the same city and have fairly frequent interaction with each other.

In the process of reviewing the large quantity of information that we had concerning these various family members, we attempted to to find an over-all conceptual model which would embrace the pattern of struggle of each individual member and at the same time account for the sequence of affairs which culminated in the patient's getting sick enough to seek psychiatric help. We began by considering the present cluster to have originally consisted of two smaller clusters: (1) The patient and her family; (2) The patient's husband and his family. Our analysis of these smaller clusters will be described first.

The data suggest that management of passive fantasies has been one of the main problems with which the patient and her family have been most persistently confronted. They all seem to face life with strong anxiety and to yearn for magical aid which will relieve them of the need to expend any effort on their own. The importance of this problem to them is indicated by a variety of factors. In its acute most obvious form the problem is apparent in the symptomatology of the patient. Her symptoms involve mainly a sense of futility and an inability to expend enough energy to perform her duties as a wife and mother. She simply "gave up". In the case of the mother and father the existence of such a problem is not immediately apparent in terms of their behavior. Just why the problem is not apparent in their overt behavior will become clear at a later point. However, one does have clear indications, in terms of the fantasies evoked from them by the projective tests, that this is a basic conflict area for them. The following is an extract from the psychological report regarding the mother:

> "The urge to rest and be passively incorporating is very strong within her. Indeed, as she has gotten older the intensity of her passivity has probably increased—She has fought against passivity all of her life—."

The following is an extract from the psychological report regarding the father:

> "He has gone through life with a strained feeling—He feels depleted—He is defending himself against passivity—There are signs that he has strong tendencies toward unrealism and wishful interpretations."

In the Rorschach records of both the father and mother there are numerous references to such passive images as:

> "Two animals resting—Someone holding them up."
> "Cats—Persians, fat, leaning on something. Rest back. Leaning back."

The patient's projective responses contain similar images. While such passive fantasies are prominent, the outstanding thing about this family subgroup is its style of defense against these fantasies. The mother and father have both fought hard to deny any weakness or passivity in themselves and have often made highly compensatory gestures in the opposite direction. Both have carried considerable responsibility, and in an interview situation they make it clear how much they have done for other people. Their heavy involvement in defending themselves against passivity is also very clear in their projective test responses. Thus, the mother is described in terms of psychological test data as follows:

> "She has fought against passivity all of her life and has tried in a compensatory way to be commanding."

The father is similarly referred to as follows.

"He perseverated throughout his test responses on the theme of smallness *vs* bigness. He cannot tolerate the possibility that he is a little man or a weak man. When assailed by doubts about himself, he must quickly do something that is reassuring."

At still another level we may point up the tradition in the family of presenting a strong front by noting that the mother comes from a family in which she was the oldest and had to assume responsibility for raising several of her brothers and sisters when her mother died. In this family setting she was expected to forget her own wishes about taking it easy and to devote all of her energy to her siblings. She said during one interview, "We had to learn to stand on our own feet." As we reconstruct it, when the patient (an only child) was born into this family atmosphere, she represented a new responsibility which must have been a significant threat to the passive wishes of the father and mother. However, they reacted to the threat with their usual denial of any weakness or resentment and set out in a compensatory way to prove they had a generous giving attitude toward the new child. In order to prove their good intent they attempted through the years to relieve this child of all responsibility and persisted in treating it like some helpless pet which must be carefully fed and which could not survive on its own. The patient reflects this attitude on their part when she says during a therapy session: "I can't do things myself. I was always part of a team. My parents were in the grocery business and so I was with them a lot." "I always depend too much on my parents for their judgment—." The patient came to expect that her mother and father would keep her completely supplied without much real effort on her own part. Over-all, one may conceptualize a basic pattern of relationship in this family group which is a function of three variables: 1) A mother and father with strong passive fantasies who deny such fantasies and defend against them by compensatory activity and giving. By giving they deny that they want primarily to be in the role of the taker. 2) A daughter who imposed a new load upon them, and who in this fashion stirred up their activity-passivity conflicts so much that they had to give to her excessively as a means of denying their underlying wishes to be rid of her. 3) The resulting inability of the daughter to be an independent person and her chronic need to take from them excessively.

The patient's husband and his family constitute the second original family cluster. We also conceive of their most pressing area of struggle and conflict as revolving primarily about issues of passivity. The father and mother are people with poorly-defined ego boundaries who feel secure only to the degree that they are part of a group in which they are on the receiving end of many contributions. One finds in their projective test responses that they frequently picture themselves as being without separate identity and as merged with others. Thus, in the Rorschach the father described a figure which turned out to be something "With legs sticking out. It's mixed up. Like a play on the stage. Like a horse. Dress up. Maybe three or four people inside." That is, this one figure actually consists of three or four people merged together inside of a costume. The mother, too, projects Rorschach responses in which there is an emphasis on fusion with others and indistinctness of ego boundaries. Here is an example:

"Two hearts *melted together*."

At an overt behavioral level this family problem is apparent in the kinds of conflicts which exist between the mother and father. Each emphasizes that the other does not give enough. The mother complains that the father stays at his place of business almost constantly, except to eat and sleep. She feels that he has placed upon her the responsibility for raising the family and for all family affairs aside from those strictly pertaining to the business. She takes a very martyred and long-suffering attitude toward the demands she feels he has made through the years. He, on the contrary, indicates that he has a right to expect his wife to do all the things he asks of her because he has to work so hard at his business. As he sees it, he simply does not have the time to make a living and also to contribute much energy or interest to his family. He expects them to realize this. Incidentally it is interesting in terms of the concept of family continuity that his grandfather is described as a person who was so preoccupied with his own

affairs that he sometimes forgot the names and relative ages of his children. In any case, both the mother and father are tremendously unsatisfied people, and they are deeply disappointed in what they are able to get from each other.

The most significant aspect of their dissatisfaction is their unconscious way of coping with it. They both unconsciously assume that parents have a right to call upon their children for the things they cannot get elsewhere. They expect a child to make big contributions to its parents. The mother expresses this fantasy beautifully in a Rorschach image.

"Two babies holding together. Keeping the man and woman together."

In the response she puts babies into the role of maintaining the relationship between two adult figures. She sees a baby as something for whose possession parents compete.

"Looks like a baby in the middle and one wants it and the other one wants it."

At a behavioral level, one finds that the mother and father have both expected exorbitant giving from their son (patient's husband). Thus, the father demanded that the son take an active part in his business at an early age and severely punished him when he tried to take time out for recreational activities. He now expects his son to devote 16 or more hours a day to the business. The son has felt so obligated to the father that for long periods he accepted very minimal wages and put most of his share back into the business. Similarly, the mother has revealed in some of her interview responses that she feels she has let her son down in various ways. She describes her son as having been "hard to raise" and refers to several incidents in which other people took advantage of him and she did not feel strong enough to help him or defend him. She blames her husband for this and indicates that she could not help her son at certain crisis points because her husband demanded that she be responsible for so many other things. Clearly, she senses that she has been very stingy and has given little to him.

One finds a species of confirmation of the validity of the conceptualization about how demanding the mother and father have been of their son in terms of some of his fantasies and behavior. There are indications that he unconsciously thinks of himself as a beast of burden whose duty it is to give of himself to others to the utmost. A Rorschach fantasy he produced conveys this feeling on his part:

"Shape of a camel. Use it in the desert. Carry people across the desert. It's something that other animals couldn't do. It has a reserve of water and carries a big load."

Likewise, in one TAT story he pictures a situation in which a child wants to study and learn, but the parents want the child to plough a field. Perhaps the best sign of his exorbitant giving to his parents is the fact that even though he is now married, he continues to put the major portion of his time, effort, and interest into his father's business. It would appear, then, that the primary interrelationship pattern in this family group is a function of 1) A mother and father who have very intense passive wishes and who feel they have a right to receive much help from their son; 2) A son who responds to the parental expectations and who has learned to fill the role of a giver and self sacrificer.

The immediate family subgroup of which the patient is now a member was formed when she and her husband left their original respective families in order to get married. Both of their families were struggling with a similar dynamic problem but with opposite modes of defense. In her family the patient was on the receiving end of compensatory giving, whereas her husband had functioned in his family mainly in the role of a giver. The characteristics and development of the new group they formed by their marriage were in a sense predetermined by their previous group memberships. The patient had met her husband while she was attending high school and married him at the age of 16, just after graduating. He was 25 years of age. Her parents protested strongly against the idea of her marrying so young. But actually one finds data which suggest that they were unconsciously exerting strong pressure on her to slacken her demands on them and to give up the role of taker. For example, they proposed that when she graduated from high school, she go on to college or find a job of some sort. She did not

wish to go to college, and her only alternative would have been to go forth and find a job. Around this time there occurred an incident which is symbolic of the pressure that was being put upon her by her parents. It was her custom to spend a good deal of time at home amusing herself inside the house. One day her mother locked her out of the house for awhile and told her that she was doing it for her own good, so that she would get some fresh air. When the patient finally announced that she was going to get married, the parents in their typically defensive way made many gestures of protest, but their basic wish to be free of her is obvious.

The patient saw in her husband someone who would permit her to play the role of taker as she had previously acted out in her family. By joining with him she was hoping to reinstitute the kind of group structure in which she was most comfortable, but from which she was being ejected. There were several ways in which he gave promise of permitting her this role. First, there was the fact that he was considerably older than she. Secondly, he profusely pledged to do his best to make her happy. During a therapy session the patient in referring to her husband's courtship said, "He rushed me." However, one may postulate that the most important part of her expectation of him was based on her conscious or unconscious knowledge that he was already functioning as a giver in his family. The precedent has already been set. It is interesting that the patient's husband sought her out for a marriage partner even though she was obviously young and immature and demanding of contributions. From what we know about him and from analogous data derived from other families we have studied, we assume that he sought her out precisely because she was a taker. His previous group membership had been based on giving to others, and in a paradoxical way he finds the giving role most comfortable, despite the various hardships it may involve. One would guess too that even though the marrigage clearly involved his having to deal with strong demands from his wife, such demands seemed relatively mild compared to the load placed upon him by his mother and father.

The patient and her husband developed a markedly conflictual relationship from the very beginning of their marriage. Their basic difficulty centered on her complaint that he did not show her enough interest. In her therapy productions the patient refers to him as having been "selfish", "showing little affection", and "taking me for granted". The most apparent and visible cause of his neglect of her was the fact that he put almost all of his waking hours into working in his father's business. When he came home from work, he was tired and had little left over to give to her. It is apparent that what happened was that he was unable to break off his ties of obligation to his original family group, even after making definite commitments to his wife. His membership in his original group was still primary, and he could not adequately play the role of giver in the new grouping. He had to continue to give a large part of himself to his father particularly. The patient defensively made various attempts to reestablish her old relationship pattern with her father and mother and also went so far as to threaten her husband with divorce. But she was unable to mobilize her father and mother into a position sufficiently supportive so that she could safely leave her husband and depend on them. She did stimulate them into a sympathetic supportive attitude, and she recruited some indirect aid from them by influencing them to speak to her husband and to suggest to him that he be more considerate. Apropos of such pressuring of her husband, she said during one therapy session that perhaps she had always expected too much of him.

About a year after the marriage a boy was born. The pregnancy was unplanned, and this event further increased the tension in the group. The patient felt terribly burdened, was depressed, and began to make a variety of new demands of her husband. She particularly focused on the idea of his being more of a father and paying more attention to his son. They had numerous arguments about why he did not play more with his son and do more for him. She felt that he left the whole burden of raising the child on her. The entrance of the child into the group meant, then, that he was subjected to even more stringent demands to play a giving role in this group. He experienced this increased pressure as something

very painful and responded by withdrawing even further from this grouping and turning his energies more to his original family. The patient as a result redoubled her pressure on her own original family and got considerable new support from her mother and father. Her husband recalls in some of his current interview responses that at that time her parents took over many of her responsibilities. For example, they helped her in numerous ways with the child. With additional help from her family, the patient and her husband and child were able to attain an equilibrium tolerable enough for the three of them to continue to live together. It is striking that during this period the husband's mother and father, true to their defensive style which involves taking rather than giving, held themselves rather aloof and gave little of their time or interest to either the patient or the new child.

When one examines the fantasies of this child, as they appear in projective tests, one is impressed with how accurately they reflect the structure of his family group. This child unconsciously sees the mother figure as someone distant, someone who has gone away and is not available to give help. Despite father's relatively cold attitude, he still unconsciously sees him as a main source of supplies and the strong one. Here is an extract of a description of his relationship with father which is based on projective test material:

"Father appears to him as his only hope. He is trying to deny whatever is negative in his relationship with father and to idealize him as a giver." The child accurately registers the fact that mother is not a giver, but that father is.

The patient's parents gave considerable attention to this child initially as a way of relieving her of responsibility, and the child was well aware of the function of his grandparents in this respect. At times he has made such remarks as the following to his mother:

"Take me to grandmother so you can lie down and rest."

Gradually, the grandparents became very involved with the child and began to focus all their giving on the child and to give less to the patient. This is particularly true of the grandfather who lavishes gifts on the child and treats him as a great favorite. The child seriously diverted from the patient the attention and interest she had previously received from her parents. She felt chronically tense and dissatisfied. Over-all, as one studies the data concerning the patient and her husband and child during the several years following the birth of the child, one can see that at best they were all in a state of uncomfortable tension and barely able to hold together as a group.

Four years after the birth of the first child the patient became pregnant again. This new stress finally upset the equilibrium of the group sufficiently so that help from outside had to be sought. Midway in her pregnancy the patient got very depressed, "limp", "weak", and found herself unable to care for her child. She states, "I found myself groping in a dream world." She pondered all the new duties that would come with the second child and could not see where she would get additional help. When she became seriously disturbed in this fashion, it had widespread repercussions on the whole range of family group members. Her husband had to decrease the amount of time he gave to his work. His mother and father became anxious about the situation—perhaps because they perceived that their son would have to divert some of his giving from them to his wife. The patient's parents had to assume a greater burden in the care of the child. Later when she was hospitalized for a while, the child went to stay with them during that period. A final dramatic phase in this readjustment sequence occurred after the patient had been in the hospital briefly. It was decided that she should stay with her parents for the duration of the pregnancy and that her child would remain at home with her husband. It is at this point that one can see that the patient through her illness has succeeded in restoring the basic group structure that existed before her marriage. Once more she was back with her mother and father in a position to make all kinds of clinging demands upon them. Her husband was at the same time left in the role of being one of the prime givers to the child; of still having to maintain many of his obligations to his parents; and of trying to give her as much support as he could muster. An example of how such a redistribution of group forces

may seriously upset other members of the group and produce new "patients" was provided by the reaction of the patient's mother. The new responsibilities imposed upon her made her feel depressed and inadequate, and she came in for psychiatric consultation. Similarly, the husband became sufficiently disturbed so that he felt the need of some psychotherapeutic help also.

We have attempted to trace the patient's illness in terms of events and patterns in three subgroups that are part of a larger family group structure. We intended this analysis as a rather crude prototype model of how neurotic behavior can be conceptualized in group terms. In order to test the meaningfulness of this model which was derived from data obtained from the separate individuals in the total group, and also as a therapeutic procedure, it was decided to call all of the individuals together for a group meeting and to observe the resulting patterns of interaction. The basic question that was being asked was whether the passivity conflicts and modes of defense against these conflicts which have been described would show themselves in the group interaction process. Would the various family members act out in the group the sorts of roles which it has been assumed they do play. All seven of the group members assembled for an hour and one-half session. The meeting was structured as an opportunity for the various family members to exchange ideas and settle issues, with the intent of helping the patient recover. One of the writers, a psychiatrist, managed the group and structured it. The other acted as an observer, and took down as nearly a verbatim account of the proceedings as possible. Generally, the data obtained confirmed the model of family interrelations we have outlined. The confirming data may be best presented by describing briefly what most characterized each person and subgroup of persons during the session.

To begin with, the patient sat almost completely silent throughout. She contributed nothing to the group discussion and took a pained resigned attitude. She spoke only once near the end of the session. She said, "I don't think the group is getting any place. I don't think anyone knows what's going on. You don't understand me." Her attitude implied that she had nothing to contribute and that she was disappointed in what the others were able to offer to her. Her parents, particularly her mother, took a much more active attitude toward the situation. The mother initially stated in a determined way that she wanted to help her daughter and her son-in-law and that she thought everyone in the group should do their best toward this end. She then systematically tried to analyze some of the difficulties that she felt existed between the patient and the patient's husband and between her side of the family and her son-in-law's side of the family. Her overt role was that of the helper, the solver of problems, the active one. Although her husband was less active verbally, he attempted to make his giving, helpful role clear in two ways. For one thing, he made a definite statement that he had always wanted nothing but the best for his daughter and her husband. Secondly, he took upon himself the job of caring for and supervising the patient's child, who was also present in a play room just outside the room in which the group was meeting. Whenever the child would enter the meeting room, he would reassure him, quiet him, and lead him back to the play room. He made it clear that he was assuming the responsibility for the boy. However, despite this apparent overt helpful role played by the patient's mother and father, their deeper purpose was to disengage themselves from responsibility for their daughter and to recruit others to take up the load. Their pattern of behavior in the group involved the same compensatory style of denying the passive wishes as was evident in their test data. Their basic passive intent and desire to reject their daughter came out gradually during the course of the session in an increasing number of references to the idea that their daughter and her husband really ought to work out their problems by themselves. They said they wanted to help, but raised the question whether a couple should not be left alone to their own affairs. The mother emphasized that she knew her daughter really wanted to stand on her own two feet and not to take anything from them. Finally, she concluded that the person her daughter most needed help from was her own husband. Her attitude may be paraphrased: "For my

daughter's own good we must not interfere in her life by giving her things or doing things for her. I want to do things for her but it just wouldn't be right."

The patient's husband took the most active role in the group interaction. He talked more than anyone else and openly revealed more of his intimate feelings. Much of what was said by the others was directed at him. A large proportion of the statements directed at him were critical and admonished him to change his ways and be more helpful to his wife. The group in general made it clear that his wife was mainly his burden and that she would get better only if he gave more to her. He initially responded in a defensive way to this sort of pressure and vented some of his resentment about his wife's lack of understanding of the necessity for his putting so much time and energy into his work. He complained that his wife was too demanding. But after awhile, his tone changed and he pledged himself to do more for his wife. He responded with acquiescence to the pressure of the other group members that he relieve them of responsibility for his wife. Near the end of the session he made this reassuring comment to his wife: "I know I can help you. You can always depend on me for important things." In an almost inevitable way he found himself assigned by the group to being a giver and a bearer of burdens.

His mother and father were generally quiet and passive throughout the session. This was especially true of his father who only spoke two or three times in the entire period. The few times he did speak it was to defend the position that a man has a right to expect his wife to assume most other family responsibilities if he is preoccupied with his business affairs. He also complained once that his daughter-in-law's family were able to visit more with his son and son's wife and to do more for them because they lived nearer and because they did not own a business which was so time-consuming. He was obviously aware of how little interest he had shown in his son's family and was trying to excuse it. He made no attempts to offer definite advice or help to anyone. His main point was that he did not have any extra time left over to do anything for anyone else. The mother indicated her unwillingness to give much of herself right from the outset. She declared that she did not see who in the group would be able to help her son and daughter-in-law. She emphasized that parents should keep their distance from their children: "If parents mix in too much it's bad." She did imply in various ways that her daughter-in-law should take more responsibility, and she defended her son's inability to give more to his wife because he had to put in so much time in his father's business. In so doing she was obviously defending the demands that she and her husband make upon her son. The other main theme in her remarks had to do with how much her husband neglected her for his work. She indicated that this imposed hardships on her which made it impossible for her to do much for anyone else. Basically, then, both she and her husband made it clear in the group that they have plenty of their own troubles and grievances and that they did not see how they could contribute much to helping their son and his wife. Their position of wanting help rather than being willing to give help was quite open.

We have similar detailed data concerning the two and three generation patterns of interaction of more than 20 families. The analysis of the family we have outlined above has been presented by way of illustration of a conceptual approach which we have found successful in understanding the individual patient as one link in an on-going group process.

BIBLIOGRAPHY

1. Ackerman, N. W.: Interpersonal disturbances in the family. *Psychiatry, 17:* 359–368, 1954.
2. Doane, B. K.: Effects of decreased sensory stimulation on visual perception: notes on experimental work in progress. *Psychol. Abstr., 29:* 625, 1955.
3. Eriksen, E.: *Childhood and Society.* New York: W. W. Norton & Co., 1950.
4. Fisher, S., and Mendell, D.: The communication of neurotic patterns within family groups. *Psychiatry* (In press).
5. Henry, J.: Family structure and psychic development. *Am. J. Orthopsychiat., 21:* 59–73, 1951.
6. Morris, W. S., and Nicholas, A. L.: Intrafamilial personality configurations among children with primary behavior disorders and their parents: A Roschach investigation. *J. Clin. Psychol., 6:* 309–319, 1950.
7. Palm, R., and Abrahmsen, D.: A Rorschach study of the wives of sex offenders. *J. Nerv. & Ment. Dis., 119:* 167–172, 1954.
8. Sperline, M.: The neurotic child and his mother, a psychoanalytic study. *Am. J. Orthopsychiat., 21:* 351–364, 1951.

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THE PROBLEM OF PHANTOM BREAST AND PHANTOM PAIN

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In another paper (4) reporting a case of bilateral phantom breasts with phantom pain, the sparsity of literature in this very special area has been commented upon. Even this year some authors mentioned that there had never been reported a case of painful breast phantom (21). There is an abundant literature on phantoms after limb amputations, but in spite of the fact that breast amputations have become a fairly common operation, there is very little mention of breast phantom. The only exceptions have been two papers within the past years (1, 5), neither of which offered any speculation on the meaning of the presence or absence of breast phantoms, especially from a psychological point of view. In this paper an attempt will be made to survey the pertinent literature. The psychological and neurophysiological aspects of phantom breasts will be discussed, with special reference to the role of the breast and the possible meanings of the loss of the breast to women.

The first mention of phantom breast, as of phantoms in general, was made by the French surgeon Ambroise Paré around 1550 (14). During the American Civil War, Mitchell rediscovered the phantom phenomenon and in a footnote acknowledged the existence of breast phantoms, stating that, "The amputated breast is often felt as if present" (12). Crone-Münzerbrock (5) in 1950 examined 49 radically mastectomized women and found breast phantoms in 26 of them. The phantom sensation was found to vary from complete sensation of the whole breast to feeling the nipple only. It occurred at varying times, precipitated mainly by climatic conditions, i.e., weather changes, cold. Only three patients ascribed the phantom to emotional excitation. Six patients felt it only at menstruation, with swelling and tightness of the phantom. In one case the phantom disappeared with menopause. About one-fourth (13 women) also had pain in the phantom, for which no peripheral cause could be found. In eight cases the pain radiated to the nipple. The patients felt that external influences, such as weather or menstruation, precipitated the pain which in no case had warranted medical help. The author also reports a case of bilateral mastectomy with phantom only on the right side, and two cases without breast phantom, who later developed a painful arm after surgical amputation. Ackerly *et al.* (1) reported in 1955 11 out of 55 women after radical mastectomies as having phantom breasts, four of which had a nipple sensation. Pain was found only in two patients and was not severe enough to require medication. On a clinical basis they found no differences in the women with and without phantom breasts, except that women with phantoms tended to be younger than the ones without. Kolb (11), in his monograph on phantom pain, briefly mentions the case of a 54-year-old nun with intractable phantom pain in her left breast, in spite of rhizotomy. First she denied having the phantom, but on inquiry, she said she had not expected the amputation and did not realize it until the dressing was removed. Kolb feels that it is possible that a nun might deny the existence of both breast and phantom more easily, since it represents a threat to her conception of herself as a nun. He did not attempt to explain why the nun had not been able to give up her breast, in terms of his general idea of phantom pain representing an unresolved loss of a body part, analogous to a depression.

Contrarily, Gallinek (8) says that he has never observed a phantom after amputation of breast, penis, or facial parts. He mentions that this is not in agreement with psychoanalytic theories for explanation of the phantom, since according to him the breast and genitals have a higher libidinal cathexis than the extremities.

Clinical Observations

The references mentioned above are virtually all of the literature on the subject. In view of this paucity, there arises the question as to how universal is the phenomenon of phantom breast. To satisfy our own curiosity, we have

examined 25 mastectomized women, most of them seen in the Tumor Clinic of Duke Hospital, returning for follow-up after surgery. The selection of patients was quite arbitrary as we interviewed all the in- and out-patient breast amputees available during the period of time of the study. The patients seen were post-operative, ranging from a few days to 15 years.

Surprisingly enough none of the patients had ever been asked about a phantom previous to our examination, and in addition no patient had spontaneously mentioned it to a doctor. Only one woman had identified the sensation as a phantom (as similar to what her brother felt after a finger amputation).

Of the 25 women seen, 16 described phantom sensations, five of which were, or had been, painful at some time. One woman, with bilateral mastectomies 11 years apart, had mild drawing pains in both phantoms. In full agreement with the previous reports (1, 5) the breast phantom sensations were typically intermittent, transient and minimal, almost never causing any concern, even if associated with pain.

Case 1: A 45-year-old woman, seen five years post-operatively, stated on questioning that she still felt as if the right breast was present. The feeling usually lasts a few minutes at a time, sometimes it is like a mild burning or itching. The sensation, "a funny feeling", had gradually decreased with the years. She had wondered about it but never discussed it with anyone.

Usually the nipple is the most clearly defined phantom part, but some patients had vivid sensations of the whole breast:

Case 2: A 34-year-old woman, seen three days post-amputation, complained of burning pain, especially in the lateral part of the phantom, radiating medially. She also had experienced a phantom sensation without pain since the first post-operative day. The pain came especially when she turned over on the operated side. She got the feeling then, as if the breast was sliding down the side, as it would have before surgery.

The pain, as in this case, was most often a mild burning or itching, and it was never severe or persistent enough to make the patient initiate complaints. It would last for a few seconds only, especially in women seen many years after operation, whereas in newly amputated patients the feelings might be more lengthy:

Case 3: A 50-year-old woman, seen six years after amputation for Paget's disease, had noted that about once a year she would feel the nipple itch, and she would catch herself scratching the padded brassiere.

Case 4: A 57-year-old widow, seen three days after a radical mastectomy with a partial resection of the chest wall, stated that she could not tell whether she had breasts or not until the dressing came off. "But if I should go on the feeling, I would think that both breasts were there."

In most cases no precipitating cause for the sensations was clearly defined although some of the factors reported by Crone-Münzerbrock (5) appeared in the following case:

Case 5: A 45-year-old woman, seen two and a half years after the amputation, described feeling the phantom only pre-menstrually and in very humid weather. She felt very silly for having such a feeling but was much more concerned about the possible spread of the cancer.

Another patient had the phantom only in cloudy weather, associated with some shoulder pain, both disappearing when the sky cleared. A few of the patients reported scar pain, but no relationship between this and the phantom was apparent. We have some questions about this problem and intend to examine it at a future time. One case, however, made one wonder about possible neurogenic stimuli initiating the phantom sensation:

Case 6: A 52-year-old woman, 4 months post-operatively, described occasional itching in the scar; on rare occasions she would feel as if a nerve had been touched in the arm (on the side of the mastectomy), and in a "tingling flash", she would feel as if the breast, especially the nipple was there. She described no pain as such. Sometimes she felt a transient quivering at the place where the lump in the breast had been prior to operation.

In another case other factors seemed more important, i.e., possibly psychological ones:

Case 7: A 42-year-old woman, seen one year post-operatively, described a pulling sensation in the axilla, at times amounting to a feeling as if the breast was still there. The latter feeling came only when she was undressed, saw the operative site and thought to herself that the breast should have been there.

Neurophysiological Aspects of Breast Sensations

The breast gland is identifiable in the embryo as early as the fourth or sixth week, as the first of all glands derived from the ectoderm (2).

Although ontogenetically the breast gland is an early development, it is paradoxically late in the phylogenesis (2). More important in this connection, however, is the late appearance of the breast as a *functioning organ* in the life of the individual. Such late appearance could indicate a weaker representation of the breast in the body image, as there is evidence that the body image is fully developed at the age of six or seven. Children with limb amputations prior to this age do not develop phantoms (17). Thus, if these observations permit a generalization, the neurophysiological patterning of the body image as such has existed for some years before the breast makes its appearance as a functioning organ in the woman's body.

The cortical representation of the breast has not been clearly delineated but is presumably included in the very small area of the post-central gyrus representing the dermatomes T 1–12 (the trunk). Penfield and Rasmussen (15) report an interesting finding in a patient with a small glioma of the medial part of the right post-central gyrus, producing sensory seizures (tingling of a non-sexual nature), beginning at the left buttock, going to the left labia, and thence to the left breast. They feel that this suggests a neighboring cortical localization of these peripheral areas. Such a finding is of great interest as it further suggests that the nipple is represented in a functional localization involving other sexual or sexualized organs.

The fact that the cortical representation of the breast apparently is minimal, and in association with this, the fact that the breast is poorly supplied with afferent nerves as compared with the limbs, and the fact that it has limited motility, fits the idea that the breast has a much less important place in the body image as a neurophysiological concept.

Phantom and Body Image

Although the problem of body image and its relation to the problems of phantoms in general cannot be considered in detail here, some formulation of what we consider the most acceptable ideas will be presented in order that we can include our speculations about breast phantoms. We feel there can be no discussion of phantoms without consideration of the body image in its psychosomatic construction. Schilder (18) conceives of a phantom sensation as the emotional reactivation of a given perception pattern, as "a playful multiplication of psychic experience", with a repeated use of actual sensations. The persistence of the phantom is indicative of attempts to maintain the integrity of the body image, to avoid facing a situation which requires a readjustment of the body image.

On the whole the body image becomes relatively fixed and loses its fluidity somewhere around the age of six or seven, as witnessed by the lack of phantoms in children prior to this age (17). However, this fixation is not final and complete; thus in dreams there may be a considerable change in bodily ego feeling. Many years ago Bethleim (3) showed that a phantom can be modified by hypnosis although these modifications were not permanent. It may be that permanent alterations in the body image can occur as illustrated by the resolution of phantoms in well-adjusted amputees.

The presence of a phantom with or without pain can only be construed as a way of handling the loss of a part of a body. To a certain degree a phantom is a normal phenomenon, and we agree with Kolb (11) that it represents a kind of mourning for a part object which, like normal mourning, may go astray, i.e., result in a severe depression, in this instance represented by a persistent phantom with or without pain. Renneker and Cutler (16) noted that those women who over-invested emotionally in their breasts tended to have the most extreme post-operative depressions, but again make no mention of phantoms. Generally we agree with Szasz (20) that pain is an ego affect although we prefer to call the phantom and the phantom pain an ego state, as described by Federn (6). Thus Federn believes that there is retained, in varying degrees of awareness, memories of physical states of the body, just as there is memory for thought and experiences.

The formation of a body image is engendered by the accumulated memories of sensations from every sensory modality, particularly the visual. Evidently this includes not only subjective sensations, but sensations of the body parts of others, i.e., either by touching or envisioning body parts of others. In addition, the constant experience of motility of the part,

whether active or passive, helps to orient the part in space for the body image. Generally, the more movement of a body part, the more sharply defined a later phantom seems to be; naturally, we are referring here to the neurophysiological patterns of the body image. Again one must also consider the very vital functional, psychological factors, which also contribute to the structure of the body image and its subsequent awareness by the ego.

In the beginning of life there is a continuous confluence between the psyche and soma with persistent general urgency into somatic discharge. One of the first functions of the growing organism (i.e., development of the ego) is to regulate this discharge, e.g., by control of the motility, which becomes one of the basic ego functions. Anna Freud (7) refers to this early period as the time of "the pre-stages of defence". All psychosomatic stimuli, specially those before the fixation of the body image, leave what Greenacre (9) has referred to as "somatic imprints" in the unconscious. Although she is referring here to the experiences of birth, we feel that this concept can be carried further, rather than be limited to the birth experience. Evidently there are laid down in the cortex certain neurophysiological patterns, which at the same time are reflected functionally in the earliest ego memories and ego states. What is most significant is that the earlier the imprint, the more fixated and irremediable are these imprints in the unconscious. One might refer to them as set in "psychosomatic concrete", or as "a frozen" ego reaction.

From a functional psychosomatic point of view, the areas most invested with libido are body orifices and also appendicular organs, i.e., arms and legs. Our comments will be limited briefly to arms and legs, and later to the breast. From the above facts we conclude that the body images of arms and legs are very early and solidly embedded into the ego because of their primary importance to the total functioning of the organism, i.e., literally, in self-preservation.

We shall only briefly give some indication of the importance of the arms and legs in ego functioning. Hoffer (10) refers to the hand as "the most useful and versatile servant of the organ". Further he quotes Preyer, that an infant introduces its fingers in its mouth, and thus initiates the first sensation of touch of its own body. In conclusion he states, "that when entering the second year the infant has built up an oral tactile concept of his body and the world around him." In this connection, it is of interest to note that we have a much poorer concept of those parts of the body that we cannot touch or see. The function of the legs is just as basic. The theme of "standing on one's own two feet," with all its ramifications, is clear. It can be said that the moment the baby can walk he leaves infancy, and in our opinion there is then present the first discernible nucleus of what later is called the super ego. Mittelmann (13), in discussing motility in general, refers to the importance of the experience of escaping from danger and getting food to still hunger and thirst, which makes motility one of the most important means of self-preservation.

These basic functions are vital to the body image. Thus, it is not by chance that the shrinking of the phantom of a normal leg is usually into those parts most vital functionally, corresponding further with their more widespread cortical representation. Self-preservation is the basic aim of the organism; as Schilder (18) has said, "The unity of the body image reflects a life tendency of the biological unit." Scott (19) puts it in other terms when he says, "The body image is something one lives through and in." Any part essential to the self-preservation has a key role in the body image, with extensive psychosomatic imprinting, and with the inevitable result that the loss of such a part, i.e., arm or leg, or parts thereof, cannot be given up so easily.

Psychological Meaning of the Breast and the Breast Phantom

Since the breast phantom is a fairly common phenomenon, in spite of the small number of physiological factors to account for it, this would indicate that psychological factors are the more important determinants. In mentioning the important meanings of the breast, Renneker and Cutler (16), after studying the adjustments of 50 women with breast cancer, distinguish between the sexual and the milk-

producing significance of the breast. In connection with the sexual aspects, they describe the equation of breast with penis, the breast being a woman's main visible female attribute. The second factor represents the breast as a symbol of motherhood, the loss of which decreases her feelings of feminine adequacy. They felt that the reaction to the amputation was related to the woman's acceptance of her feminine role. In neurotic women the breast might become over-invested, i.e., excessive pride or shame. However, in addition to the factors which they describe, another important meaning of the breast to the woman is its use as a possible aggressive weapon, i.e., in fantasy. Thus feelings of loss of the breast may be involved in fantasies about retaliation, i.e., following a primitive Thalian principle.

In essence, the factors responsible for the woman's unwillingness "to give up her breast" may be stated in many ways, representing perhaps in one way or another the emotional force which maintains the phantom, utilizing peripheral sensations:

1. It has already been mentioned that the breast may be equated with the penis, the phantom representing an attempt to deny the loss, thereby denying the anxiety associated with the loss, i.e., castration.

2. Women who have displaced their penis-wish to desire for a baby as a penis substitute may have difficulties giving up the breast, which symbolizes the baby-penis equation, unconsciously.

3. In women whose female adequacy is marginal, the phantom may represent attempts to retain feminine and sexual qualities.

4. The loss of a breast may reactivate other fears of punishment for forbidden sexual and agressive wishes.

5. The culturally determined importance of the breasts in general would tend to increase the reaction of the loss of a breast.

6. On a deeper level, to the infant a mother's breast is a part of the body ego, i.e., it is incorporated and only gradually distinguished from it's own body image. To a woman with primitive symbolic incorporative identification with her mother, her own breast may become a symbol of her mother, and correspondingly difficult to part with because it means symbolically the loss of, or separation from, her mother.

The breast as a functional part of a woman's body comes relatively late in her development, and moreover at a time when the body image is relatively fixed. The breast, rather than being a part of the self-preservative ego functions which are embedded in fundamental psychosomatic patterns, develops at puberty, at a time when important sexual changes occur in a woman. At this time there is a repression of sexuality associated with the clitoris, leading to the investment of the body with secondary narcissism, e.g., interest in clothes, breasts, hair, etc. This investment of the breast is primarily *functional* and *secondary*. There is none of the psychosomatic fixation characteristic of the arms and legs. Thus, the phantom of a breast is more transient and not so clear-cut as the phantom of an arm or leg. A similar reasoning can be applied to explain the relative rareness of other axial phantoms, and counters the argument raised by Gallinek (8), as referred to above, that lack of axial phantoms invalidates psychoanalytic explanations of phantom phenomena. From a neurophysiological point of view this seems supported by the fact that as yet there is no evidence of cortical stimulation leading to breast sensation or motility alone. The only case reported (15) significantly shows a simultaneous involvement of other sexual parts.

From a functional point of view there are other factors which contribute to the lack of reporting and perhaps the transiency of phantom breasts. We refer here to the normal feminine, passive, masochistic disposition in the mental life of women. The female is psychologically and biologically prepared normally to accept that she has no penis, i.e., is castrated, that she must menstruate, and that eventually after impregnation, she must give up a child, i.e., *a part of her body*. We feel certain that this disposition contributes not only to a lack of perception and reporting of breast phantoms, but helps account for the lesser intensity of phantoms generally in women.

It is also interesting to note that the problem of phantom breast and phantom pain in women is complicated by the unconscious

attitude of surgeons generally. Thus, surgeons seem to expect women to accept surgery on their sexual organs much more readily than they do men. It is a well-known fact statistically that surgeons are much more apt to operate on women than on men, and that the big areas of difference lie in pelvic and breast surgery. It is also true that there seems to be a difference in attitudes of surgeons to the area of surgery contemplated. Illustrating this is a remark by a surgeon that the pelvis looked "Neat and normal after a hysterectomy," whereas after a gastrectomy in a man, and even in a woman, there appeared to be "a defect in the abdomen." This comparison can be carried further. For example, sterilization procedures are rarely if ever considered in the husband, but invariably the wife is selected as the one to be sterilized. The feelings about surgery of the sexual organs in women are, of course, carried over into attitudes toward the breast, not only to the breast as part of the sexual apparatus, but also into the pregenital meanings of the breast.

It is certainly not clear as yet why there is breast phantom pain when it does occur. It is too easy for us to retreat behind the generalization that after all it is not clear why phantom pain occurs at all. Several explanations are available although the etiological factors have not been clearly defined. Kolb (11) has emphasized the phantom pain as a depressive equivalent. Phantom pain as a conversion reaction was illustrated in our case report (4). The possibility of peripheral neurogenic stimuli from the operative site must also be considered. Whatever origin the reactivating stimulus has, and in whatever clinical setting the phantom pain occurs, we feel that the total phantom sensation corresponds to an ego state which includes somatic memories of previous breast pain. Further, it is not clear whether the pain (or perhaps even the phantom) is related to the memory of someone else's breast, i.e., the feeding parent or its equivalent, rather than to the narcissistic investment of the patient's own breast. It may be that those patients who have the most difficulty with the phantom breast are the more regressed patients with passive dependent needs who have never been able to assume an adult role and separate themselves from their mother's breast. The one case reported in detail by us (4) would seem to indicate that this may be so.

Summary

1. The observation has been confirmed that the breast phantom is a common phenomenon, occurring in about half of all mastectomized women, and that a minority of these develops a phantom pain which, like the phantom sensation itself, is mild and usually very transitory.

2. The literature is reviewed, and some of the neurophysiological and psychological aspects of breast and breast sensation are discussed, especially the meanings of the breast to the woman.

3. The development and nature of the body image are formulated in terms of ego psychology, with emphasis on the fundamental importance of appendicular organs. This is used to explain the relative rareness of phantoms of axial parts, which are invested with secondary narcissism after the body image has become more fixated.

BIBLIOGRAPHY

1. Ackerly, W., Lhamon, W., and Fitts, W., Jr.: Phantom breast. *J. Nerv. & Ment. Dis., 121:* 177, 1955.
2. Arey, L. B.: *Developmental Anatomy.* Philadelphia: W. B. Saunders Co., 1954.
3. Betlheim, S.: Zur Lehre vom Phantom. *Deut. Zeitschr. f. Nervenheilk., 90:* 271, 1926.
4. Bressler, B., Cohen, S. I., and Magnussen, F.: A case of phantom breast. *J. Nerv. & Ment. Dis., 122:* 315, 1955.
5. Crone-Münzerbrock, A.: Phantomgefühl and Phantom Schmerz Nach Mammaamputation. *Langenbech's Arch. f. Klin. Chir., 266:* 569, 1950.
6. Federn, Paul: *Ego Psychology and the Psychosis.* New York: Basic Books, 1952.
7. Freud, Anna: *The Ego and the Mechanisms of Defense.* New York: International Univ. Press, 1946.
8. Gallinek, A.: Phantom limb, it's origin and its relationship to the hallucination of psychotic states. *Am. J. Psychiat., 96:* 413, 1939.
9. Greenacre, P.: The biological economy of birth. *Psychoanal. Study Child, 1:* 30, 1945.
10. Hoffer, Willie: Mouth, hand and ego-integration. *Psychoanal. Study Child, 3:* 49, 1949.
11. Kolb, L.: The Painful Phantom. In *Amer. Lect. Ser. No. 235.* Springfield, Ill.: C. C. Thomas, 1954.
12. Mitchell, Weir: *Injuries of Nerves and Their Consequences.* Philadelphia: J. B. Lippincott Co., 1872.
13. Mittelmann, B.: Mobility in infants, children and adults. *Psychoanal. Study Child, 9:* 142, 1954.

14. Paré, Ambroise: Quoted after 5.
15. Penfield and Rasmussen: *The Cerebral Cortex of Man*. New York: The Macmillan Co., 1950.
16. Renneker, R., and Cutler, M.: Psychological problems of adjustment to cancer of the breast. *J. A. M. A., 148:* 833, 1952.
17. Riese, W., and Bruck, G.: Le Membre Fantome chez L'Enfant. *Rev. Neurol., 83:* 221, 1950.
18. Schilder, P.: *The Image and Appearance of the Human Body*. New York: International Univ. Press, 1950.
19. Scott, R. D.: The psychology of the body image. *Brit. J. Med. Psychol., 24:* 254, 1951.
20. Szasz, T. S.: The ego, the body and pain. *Psychoanal. Quart., 3:* 177, 1955.
21. Tissington Tatlow, W. F., and Oulton, J. L.: Phantom limbs. *Canad. M. A. J., 73:* 170, 1955.

SCHOOL OF MEDICINE
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SOCIETY PROCEEDINGS

BOSTON SOCIETY OF PSYCHIATRY AND NEUROLOGY

Meeting of November 17, 1955

Dr. Erich Lindemann, President, Presiding

THE NEUROPATHOLOGY OF EXPERIMENTAL PYRIDOXINE DEFICIENCY. MAURICE VICTOR, M.D. AND RAYMOND D. ADAMS, M.D.

The purpose of this study is to report the neuropathologic findings in pyridoxine deprived monkeys. Six monkeys were made deficient by withholding pyridoxine, and compared to a similar group of monkeys on stock rations. One additional monkey was rendered deficient by the administration of desoxypyridoxine. The most readily discerned abnormality was in the cells of Betz and to a lesser extent in the smaller pyramidal cells of the cortex. The affected cells appeared swollen and more roundish than usual, with eccentric nuclei and varying degrees of loss of the Nissl particles. In some monkeys there was a slight increase in the astrocytic glia. The brain stem, cerebellum, spinal cord, dorsal root ganglia, anterior and posterior roots showed no consistent lesions. The peripheral nerves were affected in all but one of the deficient animals. In general, the nerve affection was slight, and more in the sciatic than in the brachial nerves. In the desoxypyridoxine treated monkey the nerve lesion was very severe. In none of the sections did the blood vessels appear abnormal. The control animals showed no significant neuropathologic changes.

The changes in the cells of Betz were similar, though not identical with those seen in pellagra.

Discussion.—DR. RANDOLPH K. BYERS: I wonder if any pyridoxine diets were fed young monkeys. We have seen babies with convulsions controlled after the baby was placed on a pyridoxine diet.

DR. JOSEPH M. FOLEY: Were there any vascular changes such as have been described by some in pyridoxine deficiency, especially in the smaller blood vessels? Did any of these animals have convulsions? Has the work progressed to a point where it is possible to define what is going on in the cell? What is the nature of the cytoplasmic disintegration? At what point is the process reversible?

DR. ROBERT S. SCHWAB: How many months or weeks can the monkeys go on this diet, and then go back on a normal diet and find no change?

DR. D. DENNY-BROWN: How do Dr. Victor and Dr. Adams exclude the possibility of the effects of general malnutrition in experiments lasting more than 200 days? Does not the poor gain in weight mean the operation of secondary factors? Further, thin sick monkeys tend to sit on their haunches for long periods and thus develop pressure lesions of the sciatic nerve. Was the peripheral degeneration found in other nerves? The affected nerve cells shown seemed to me to have a darker more homogeneous cytoplasm than those seen in pellagra.

DR. CHARLES A. KANE: Once the animals were rendered deficient, was replacement made orally or by injection?

DR. FOLEY: I notice that Dr. Victor discounts the significance of the dark-staining nerve cells. Although they are seen with some regularity in routine pathological material, they are nevertheless different from the usual appearance of the nerve cell. Is it possible they mean something other than artefact?

DR. LINDEMANN: I was impressed by the amount of generalized nutritional state. I was not clear whether that happened in spite of the same caloric intake.

DR. VICTOR: As to Dr. Byer's question of whether baby monkeys had fits, I do not know whether that has been done; I doubt it. One pediatrician has put two babies on a pyridoxine diet. He claims both these children had convulsions.

In regard to the vessels of the brain, we looked carefully for vessel change, but could not find any. Two separate groups of investigators, Rhinehart and Greenberg, and Musbett and Emerson at Merck, have both studied the blood vessel change carefully. They have been unable to find any involvement of carotid and cerebral arteries. The blood vessel change has been produced in dogs as well as monkeys.

Could we have missed some convulsions through a lack of continuous supervision. We might have. As it is we saw convulsions in one deficient monkey, and interestingly these occurred only after pyridoxine therapy was re-instituted.

The question of whether the nerve cell changes represented are axonal reaction cannot be settled with finality. We feel that it could not suitably be called an axonal reaction for the reasons given before. There are no nuclear inclusion bodies seen.

We did try to reverse the pathologic changes by giving pyridoxine to the deficient monkeys. In one monkey, pyridoxine was given after 105 days of deficiency—intravenously, intramuscularly, and by mouth, without complete reversal of changes. Some changes we illustrated were from monkeys treated with pyridoxine after prolonged deficiency period. Both however had been deficient for a long time before treatment was reinstituted.

We feel there is a difference between the appearance of the Betz cell cytoplasm in the pyridoxine deficient monkeys and in pellagrous patients. It is diffcult to describe the difference in words. Brachial nerves were affected as well as sciatic, although to a lesser degree.

DR. RAYMOND D. ADAMS: I do not know how one can get at this problem of controlling other nutritional factors involved in animal experimentation that covers a long period of time. The proof as to whether the changes produced were purely due to pyridoxine deficiency would come from a reversal of the pathologic changes by the administration of only B_6. Even that might not clinch it for the changes may be irreversible. If animals get no B_6, they become sickly. If they show enough inanimation they do not develop vitamin deficiency. It was almost impossible to produce symptoms of B_6 deficiency in the dogs who would have died if B_6 had not been given. These are problems confronting everyone working in the nutritional field.

Dr. Victor said something about the cell change. At first I was loathe to accept this as a significant pathological finding, since three or four animals died during the night and were autopsied the next morning. We wondered whether this was a postmortem artefact, but this is an unusual type of change for a postmortem artefact.

Dr. Foley asked about what we thought was going on in the cell. I doubt if our stains are good enough to settle that at the moment. We haven't done the stains for intranuclear inclusions. If the change we saw is a reliable one, something has happened to the nuclear metabolism of the cell whereby chromatolysis occurs, at first in the perinuclear zone. I do not attach any significance to the spike cell. That is frequently a postmortem artefact. In the European literature, it has been recorded that simply tapping the spinal cord will increase the number of spike cells. They were found in all our experimental material, and they have no meaning here. All of us are aware of the mistakes that have been made in regard to this cell. It has been presented as the earliest change in anoxia, which it certainly could not be.

We used Marchi stains. They did not help us very much.

II. TREATMENT OF PARKINSON'S DISEASE

A. PSYCHOTHERAPY IN PARKINSON'S DISEASE. MORRIS E. CHAFETZ, M.D.

Emotional upsets intensify the symptoms of Parkinson's Disease. An attempt was made to utilize group and individual psychotherapy as a means of understanding the emotional reactions and improving the adjustment to this disease.

There was no specific pattern of response, although a number of mechanisms predominated. Denial was a prominent and common feature. It appeared in response to anxiety over what the illness had done to their self-sufficiency. Inability to perform everyday functions easily led to exaggerated feelings of helplessness. These feelings of helplessness served to intensify fears of dependency.

Since the patients have a conspicuous illness, denial did not work completely resulting in varying degrees of depression. The more the patient was depressed, the more he tended not to follow his medication schedules carefully. This resulted in an uneven response to treatment, which in turn increased the depression, thereby establishing a vicious cycle.

In patients with obsessive-compulsive-like personality structures, the slowness caused by Parkinson's Disease interfered with their ritualistic defense system. This resulted in anxiety over primitive impulses which cannot be as successfully defended. This anxiety is further heightened when increased efforts to re-establish pre-disease patterns failed.

Treatment by the group technique was effected by (1) universalization of patients' problems (2) development of group cohesiveness (3) lessening of social isolation, and (4) intra-group support. In the individual therapy setting, support is effected by (1) re-establishing successful defense patterns (2) active support in attempts to maintain healthy, independent relationships (3) working through aspects of dependency fears and (4) classification of misconceptions concerning the disease.

Of the patients seen, approximately one-half (60) accepted further psychiatric interviews. From this group, two-thirds (40) were benefited.

B. FIVE YEAR REPORT ON DRUG THERAPY. ROBERT S. SCHWAB, M.D. AND ELEANORE K. GARVEY

With the introduction of new synthetic drugs that have some anti-rigidity and anti-tremor effects in Parkinson's disease, a rather confusing picture was created as to what were the best preparations. This report is an assessment on the relative efficiency of 8 preparations that have been in use for the past five years.

In 1949 a relative comparison of the effectiveness of these drugs was made at the international neurological meeting and the order of effectiveness was as follows:

Drug	*# still on*	*total*	*%*
Artane	59	75	78
Panparnit	54	87	64
Benadryl	44	72	61
Solanaceous	72	157	46
Phenergan	6	14	43
Thephorin	13	41	32
Amphetamine	11	36	31
Parsidol	6	25	24

At the present time this has been re-examined and the order is as follows:

Drug	*# still on*	*total*	*%*
Parsidol	163	243	67
Thephorin	140	308	45
Artane	131	298	44
Benadryl	57	170	33
Amphetamine	56	190	29
Panparnit	14	91	15
Solanaceous	17	186	9
Phenergan	1	17	6

The index of each drug is determined by the number of patients that have been given the drug during the past five years divided by the number still taking the drug when the assessment was made now. For ex-

ample, 163 patients of 243 are still taking Parsidol, as opposed to 131 still taking Artane out of a total of 298.

Newer drugs such as Pagitane and Kemadrin have not been available long enough to be compared with the above preparations but seem to be running about the same as Artane. The use of amphetamines and other analeptics have greatly helped some patients in tolerating effective therapeutic doses of the other substances.

The shift from the Artane and Solanaceous drugs may be due in part to the shift in the age distribution of the Parkinson population from a peak in the 50 to 59 year age group to that of the 60 to 69. For example in 1948 in 252 patients there were 10 under 29; 43 30/39; 62 40/49; 77 50/59; 53 60/69 and only 7 over 70. In contrast to this our present population (Oct. 1955) consists of 331 patients distributed as follows with the peak a decade higher than in 1948; 0 under 29; 28 30/39; 48 40/49; 82 50/59; 114 60/69 and 59 over 70.

It is well known that the side effects of the atropine drugs increases with advancing years.

Discussion.—Dr. Benjamin Simon: There are a number of interesting features in the psychological situation of Parkinsonism which is not true of a good many other organic disorders. In Parkinsonism, the psychologic effects are often manifest before there is knowledge of the neurological disorder. One of the earliest becomes apparent in the sexual life of the patient. He becomes awkward. His rigidity has not yet become marked, and there seems to be no explanation. In illness in general, there is a state of dependency which tends to intensify empathy. In Parkinsonism, the dependency is a repellent type leading to rejection rather than acceptance. Group therapy, in this situation, presents some interesting aspects. On the surface, Dr. Chafetz' presentation would seem to present a good argument for homogeneity of groups. This I would dispute. Ulcer cases which I once treated identified with each other as positives on the basis of their disorder, and presented a broad front to society. Treatment was very difficult until the group was broken up and mixed with other types of emotional disorders. In Parkinsonism, the identification produces a group unity on the basis of a definite and perceptive physical disorder. They are able to meet the aggressor with a common front. I do not believe this would have been true if the Parkinson cases had been mixed with others. In these cases, exposition of subtle dynamics was obviously useless. Instead of trying to deal with Narcissism for the establishment of better object relationship, in Parkinsonism we replace the repelling objects with objects similar to each other and who are in empathy with each other.

Dr. Henry R. Viets: There is hardly any other disease with more marked clinical signs than Parkinsonism. One of the reasons many patients are depressed is based on their mental alertness, even after their facial expression is lost. To friends and neighbors, a mask-like face, postural immobility and tremor, indicate "failure," both bodily and mentally. Facial expression is the sort of thing cartoonists emphasize. Certain expressions are signs of success. It is said that no public figure can be a famous politician without certain facial characteristics. The Parkinsonian, keenly alert, may think in terms of public approval and this may be the main reason in a few instances for his abnormal mental state. How difficult it is to judge a patient's mentality, when no facial expression is shown. Dr. Denny-Brown will remember the rigid, expressionless Sir Henry Head in the last years of his life. In spite of his symptoms, he was all too keenly alive to his situation and depression was brushed aside by his magnanimous outlook on life. But many patients need psychotherapy on a level of normal mentality in an environment of grave physical disability. To differentiate between dullness of expression and dullness of mind is one of the secrets of successful care of the Parkinsonian.

Dr. Lindemann: While both of these topics were discussed, I wondered about the use of the word therapy with respect to a disease process. The word psychotherapy is often used to denote systematic efforts to alter psychological processes, when the disease is primarily a psychological disorder. We have in Parkinsonism a progressive brain condition impairing posture and motility and have a certain psychological response. I wonder if it wouldn't be more appropriate to think about the management of psychological sequellae as something different from what we ordinarily call psychotherapy. I think that was implied in Dr. Viets' remark, whether internist, neurologist or psychiatrist, is likely to be familiar with dealing in a human way with the consequences of an illness. It might be good to separate them out a little from what we usually call psychotherapy.

Dr. Chafetz: I want to thank Dr. Simon for his comments. In ulcer patients the disease entity is not observable to the environment. However, in Parkinson's Disease, it is not only observable, but prominent thereby creating different emotional stress situations. With the use of the group technique, we were only hoping to effect a means of increased support to these patients and we were leaving deeper dynamic structures alone. Thereby, we pursued group therapy with limited goals. In the individual therapy sessions, a more classical therapeutic approach was made with the goal of achieving insight, and altering significantly the patients behavior. Naturally, in our limited time, I was unable to report on the dynamics evolved in the individual psychotherapeutic setting. I should like to say to Dr. Viets that not all the patients we saw were depressed. Others, had developed other emotionally incapacitating syndromes, which were likely present premorbidly, but which became overt with the development of Parkinsonism. Another point: patients who develop a conspicuous disease like Parkinsonism are confronted with emotional traumata that have different meaning to each patient, and these must be worked out psychotherapeutically.

Dr. Schwab: Can the ordinary doctor give a depression psychotherapy? I always thought I could. I I have been disturbed in my naivete, encouraging them with support which fails to help. Then a psychiatrist takes over and does not concern himself with medicine.

Much to my surprise the depression lifts. Whether you really need two people separately attacking their problems, we cannot be sure.

MENTAL HEALTH FILM AND GROUP PSYCHOTHERAPY. SAUL COOPER, M.A. AND MERTON J. KAHNE, M.D.

An interdisciplinary project involving the departments of Nursing, Physical Medicine and Rehabilitation, Psychology and Psychiatry of the Boston VA Hospital was developed around the exploratory use of mental health films in a group setting. Over a period of one year 20 closed ward patients were shown and given an opportunity to discuss 39 films. The experiences of the group were assessed in terms of 1) the interplay of specific effects called out by the films with those due to the processes of a formal psychotherapeutic group, 2) the safety of using mental health films with severely emotionally disturbed people, 3) possibilities of education of such patients to general principles underlying modern mental health concepts and psychiatric practices, 4) the influence of such a program on hospital policy and functioning.

It was found that the films had a marked catalytic effect on the group process. The procedure complemented and tended to facilitate other therapeutic procedures. With adequate communication between participant and non-participant personnel, realistic decision making and assignment of responsibility, and psychotherapeutic supervision, the procedure was safe. Transitory disturbances did occur but could be used to the patient's clear benefit. Patients used relatively little jargon and cliches, caught on to why the therapists were interested in their biographies and seemed to achieve wider knowledge of human behavior and greater understanding of the common roots of different reactive characteristics of people. There was an indirect educational effect on non-participant personnel, increased use of audio-visual aids in the training programs and formation of another more purely educational film group. There was also some concern about the advisability of censorship of non-mental health films being shown to the general medical and surgical patients (non-psychiatric) in the hospital.

Discussion.—DR. LINDEMANN: This very interesting review of a group experience is open for discussion. I have been wondering whether the fact that these were mental health films was an important issue. Perhaps having a film of Peter Pan, or H.S. Pulham, Esq., might not also initiate an interesting group discussion in which increased communication, sharing experience, group cohesion, joint consideration of the mastery of life problems might result. There must be something special about so-called mental health films which might be interesting to discuss further.

DR. WILFRED BLOOMBERG: There are a few points worthy of further comment. I would like to remind the audience that the patients here described and discussed were all closed ward patients though this has not been stated in the paper. It is interesting that the work started with a concern about the problem of showing or not showing certain films to psychotic patients. Our VA Central Office has a department which screens films and decides whether they are suitable for psychiatric patients or not. In our decentralized lack of wisdom in our hospital, we have questioned the judgment of this screening department. We think that there may be a basis for censorship of films but that the department doing it had not yet discovered the proper basis. Our patients have not been disturbed by Westerns with lots of shooting. The only picture which so far has disturbed them was a fantasy science-fiction one that got in by mistake and that portrayed unpleasant things to look at and that the staff found just as disturbing as did the patients.

A second point of interest brought up by this paper, while it is tangential to the purpose of the patient group, is that it clearly points up the fact that when these films are used in mental health education, they should not be sent out for showing without a competent discussion leader to go along with them. Unless there was such a discussion, each person who saw the film saw something so different in it from each other that the film could well be meaningless for basic educational purposes.

I wish the film makers would listen to papers like this. I have had some experience with people who make documentary films. They find a psychiatrist and list him a consultant. They talk over a good topic and ask for a good example from clinical material. They ask if this is a sound way to do it. Then they say goodby and never see the psychiatrist again. They write the script, and they make the films with the notion that they are the ones that know about making the films and that they need no further help. I have tried to get film makers to submit some of their films for criticism to intelligent but unsophisticated audiences but have had very little success. An example was a film of several years ago which showed a patient being brought back to a hospital screaming and hustled by three aides down a corridor. We knew, and the film makers knew, that this was a temporary relapse and that the patient would get better. However, this wasn't made clear in the film, and they weren't even interested in finding out what a lay audience would think on seeing such a scene portrayed.

I have been fascinated to watch the experience reported here tonight and have been impressed by the courage of the group who did it in starting it. I am pleased with the results.

DR. BENJAMIN SIMON: Let me carry the idea a bit further with the example of "*Let There be Light*," a documentary in which there are no "artefacts," and which I have been using for some time in the treatment of patients. I have found that the closer the film gets to the patient's experience the more it disturbs him. I do not mind this since it is a focus around which therapy can be developed. When the film is shown to psychotics and psychoneurotics, they generally react as did Cooper's patients. When shown to veterans in general we get the same reaction, but when shown to male veterans who have been treated in the Service for psychoneuroses, we get a much more disturbed response. Interestingly, this is not seen in officers or female veterans with neuroses. The film is a film of

military psychoneurotics in the military service. Since it is absolutely documentary, the identification would appear to be too intense.

I was very interested in the idea of the theoretical basis for the efficacy of films presented by Mr. Cooper. I agree that the film acts as a screen for the projection of the inner tensions. A good psychiatric film has the same value as a good painting for the projection of primary process phenomena—visual, imagery, condensation, displacement, etc. When the film is artificial and tends to be didactic, there is little reaction and less therapeutic reaction.

DR. MARTHA BRUNNER-ORNE: We found the use of educational films very helpful in the treatment of alcoholics, particularly when followed by discussions. I remember one film which was extremely successful. The film was called "*Alcohol and the Human Body.*" It demonstrates the physiology and metabolism of alcohol, and shows how alcohol is broken down in the organism. The film demonstrates how alcohol attacks the nervous system first. In a simple way, by means of animated drawings, it points out that the frontal lobes are affected immediately.

After the film was shown and the physiology of the frontal lobes were discussed, somebody brought up the point that this film offered a good explanation why people did not stick to their good intentions of having one or two drinks only, because the judgment and planning centers were affected. Long after this film demonstration with the following discussion, I had many reverberations from participants in the meeting. Even though not quite scientifically valid, it had an extreme impact on the people present, and it was amazing to see how much benefit was derived.

We hope to have more good films in the field of alcoholism, although I don't think it is necessary to present films with alcoholism as the only topic. We are planning to use psychological films in the treatment of alcoholics and also in our general re-education endeavors.

DR. KAHNE: I want to thank the people who have discussed the paper. I think Dr. Simon is correct. I want to emphasize one aspect. The general notion that runs around psychiatric circles, that it does not make any difference what you say, but how you say it. We showed many of the films in this series to psychiatric personnel of our hospital. They all had ideas that they were not *made* well and were not good. Our patients found almost the opposite in direct proportion to the degree of illness. As they got better their attitudes were closer to that of the personnel. As they get better they were more critical about technique. About Dr. Lindemann's question whether it makes a difference whether or not this was a mental health film. I think it does make a difference. They were talking very directly about feelings of depression. Lobotomy for schizophrenia. Not only was there an effect in psychotherapy but problems relating to apprehension about electric shock therapy were discussed in greater detail. They were talking about very specific things. The interesting thing to us was the use of films related to normal or abnormal childhood development. Patients were very interested in these films and that played an important part in the second year of work. This project started with an observation about a fear, common in mental hospitals, that you are not supposed to expose patients to anything strongly emotional. One evening a group of disturbed patients was supposed to see a boxing bout on television. The bout was cancelled, but a film "Schizophrenia" was shown instead. These very disturbed patients responded by rapt attention. They were quiet, asked questions the next day. They were interested in the problem. None were disturbed by the experience. The apprehension that goes around hospitals is more in the personnel than in the patients. If these films are used, there should be ample time for discussion, and continuity in the group. If they do not have the support of a large group, they will leave, get upset and can leave negative effects. Once the group process begins to have an effect, they can be used with a remarkable degree of success.

NEW YORK NEUROLOGICAL SOCIETY AND THE NEW YORK ACADEMY OF MEDICINE, SECTION ON NEUROLOGY AND PSYCHIATRY

Joint Meeting, Jan. 10, 1956

George H. Hyslop, M.D., President, New York Neurological Society, Presiding.

THE SUPERSENSITIVITY OF CHRONICALLY, PARTIALLY ISOLATED CEREBRAL CORTEX AS A MECHANISM IN FOCAL EPILEPSY AND LOBOTOMY. DR. FRANCIS A. ECHLIN.

In 50 monkeys and one human areas of cerebral cortex were neuronally isolated or partially isolated, and in four monkeys frontal lobotomies were performed. Seven to 10 months later 0.2 per cent acetylcholine applied to the cortex caused wave and spike discharges selectively from the isolated or partially isolated areas. The resting discharge in the ECG from such partially denervated areas at times resembled that seen in an epileptogenic focus and when dilute ACH or eserine and ACH were applied to it focal cortical seizures and even prolonged status epilepticus occurred in some animals.

In the chronically lobotomized monkeys bipolar electrodes were placed 8 mm. anterior to the lobotomy

incision and 8 mm. posterior to it. The degree of injury and of ischemia was apparently essentially the same at each pair of these electrodes. However, when acetylcholine (0.5 to 1 per cent) was applied to the cortex it caused selective firing of epileptiform activity from only the electrodes anterior to the incision, over the lobotomized, partially isolated area. The supersensitivity demonstrated was, therefore, apparently due to the isolation factor and not to injury or ischemia.

The findings provide further evidence that Cannon's Law of Denervation applies to the cerebral cortex and that the supersensitivity of partially denervated nerve cells around the periphery of brain tumors and cortical scars may be the basis of focal epilepsy in such cases.

It has been demonstrated that lobotomy caused a profound change in the physiological chemistry of the partially isolated cells (a supersensitivity) in the frontal lobe and probably elsewhere. It is therefore suggested that the clinical effects of lobotomy may be, in part at least, the result of this supersensitivity.

Discussion.—Dr. H. Houston Merritt: It is a great pleasure to hear Dr. Echlin present the results of his studies which are of great importance to those of us who are concerned with the problem of convulsive seizures. The more one deals with this problem, the more it would seem that patients with convulsive seizures have some damage to their brain to account for their attacks, and that the hypothesis of idiopathic epilepsy becomes less tenable.

It is self-evident that a completely isolated area of the cortex would not, no matter what you did to it, affect the rest of the brain. It could not produce a discharge that could be transmitted to other parts of the brain and produce a convulsion. A small, or large, area of the brain that has been partially deprived of its connections could conceivably be hypersensitive because it is deprived of a number of its synapses. Synapses have an inhibitory as well as a stimulating role. If a great many of the inhibitory influences acting on these cells are destroyed, they could become hypersensitive to various types of stimuli. Dr. Echlin has stated that the partially isolated areas are hypersensitive to acetylcholine applied topically and to metrazol injected intravenously. It is quite probable that they are sensitive to a great variety of chemical and other agents. Now, how could this hypothesis be made applicable to the problem of convulsive seizures in man? Is this hypersensitivity a manifestation of Cannon's law of hypersensitivity to a specific neurohumor, or can we interpret it in another way?

Dr. Echlin's studies would suggest that the outlook for finding a cure for epilepsy is less hopeful than it was when it was thought that there was possibly some generalized metabolic defect underlying the convulsive state. The problem then would be to find some agent which would correct this metabolic defect and thus cure the seizures. If all seizures, or the majority of seizures, are focal seizures (and Dr. Echlin has limited himself to this aspect) and are due to damaged cortex which is partially isolated, then therapy of convulsive seizures resolves itself into either excision of the irritable focus or dampering the hyperactivity by some chemical agent. Dr. Echlin would probably be one of the first to say that surgery is not the answer. We should not be unduly discouraged, however, because the chemists are now isolating many chemical compounds that can affect the activity of the central nervous system—and it is conceivable that a chemical compound will be discovered that will influence the activity of hypersensitive cells without depressing normal cells.

Dr. Benjamin Harris Balser: I think this is an excellent presentation. May I suggest to Dr. Echlin the consideration of depth electrode studies along the same lines as he has been doing, particularly in the animal? It would be interesting to know what effects one could see in terms of depth electrodes.

Dr. Abraham M. Rabiner: Cortical cell discharges are the end result and sum total of the many influences converging on that cell from many other areas. When the cortex is isolated, as Dr. Echlin has done, are we justified in speaking of these discharges as the result of cell supersensitivity? Would it not be more accurate to say that these cells, having been cut off from the normal influences of inhibition, modulation, etc., exerted by these other areas, are not necessarily supersensitive, but their responses are uncontrolled?

Dr. George H. Hyslop: I would like to ask Dr. Echlin how is he going to distinguish between anatomic or structural and physiological or biochemical physical bases for the abnormal cell reactions he described.

I have in mind the fact that individuals with idiopathic epilepsy have no known structural or anatomic characteristic pathology of causal nature and that electroencephalographic abnormalities may be transmitted from one generation to another, whether or not seizures occur. I have in mind also the fact that both focal and grand mal seizures occasionally are precipitated as a result of exposure to a specific allergen, with no background whatever to imply an organic structural defect.

Dr. Francis A. Echlin: I would like to thank Dr. Merritt for his excellent discussion, and also the other discussors.

Dr. Merritt brought up the question whether the supersensitivity that has been described is an example of Cannon's Law of Denervation. I really do not know whether this is an example of Cannon's Law, but it seems to conform to many of the things he has observed in peripheral structures. The phenomenon of supersensitivity in the chronically isolated areas of cortex is in keeping with his Law. However, I have described supersensitivity in acutely isolated cortex and this is not in conformity.

I think perhaps one thing is of value in this work; if these supersensitive areas of cortex that I described really represent epileptogenic cortex when they are partially isolated, then we now have, almost for the first time, a preparation where we can study epilepsy, and produce it experimentally, if, as I say, this is epilepsy. I do not know whether it is or not. It is true we can produce epileptic seizures with aluminum cream but that is a chemical irritant that does not produce a physiological state, as isolation does. Now, with unlimited preparations like the one described, we can study the effect, for instance, of glutamine, as Donald Tower has been doing on human epileptic cortex removed by Penfield.

As far as a study with depth electrodes is concerned,

which Dr. Balser brought up, I think that that would be an excellent thing to do.

Dr. Rabiner, I believe, asked whether the cause of the supersensitivity is because the connection of cells has been cut; if the connections have been cut, then the cells have been denervated, and all I can say is that they then become supersensitive; they may be described as hyper-irritable, and this may be because they are released from other cells.

Dr. Hyslop asked how to distinguish between the anatomic changes and the physiological changes in these cells which we have seen manifested as high voltage discharges from partially isolated areas of cortex. The latter is a physiological manifestation of epileptiform discharge. Anatomically many of these cells do show some changes, and I am hoping that Dr. Stevenson and some other people will help us to describe these anatomic, or rather pathologic, changes later.

THE "DIETING DEPRESSION": UNTOWARD RESPONSES TO WEIGHT REDUCTION REGIMENS AMONG CERTAIN OBESE WOMEN. DR. ALBERT J. STUNKARD.

In recent years the physical ill-effects of excess body weight have been firmly established, and there is strong evidence that reduction to a so-called "ideal weight" can obviate these ill-effects. Thus, to ancient cosmetic reasons there have been added powerful medical pressures upon obese persons to reduce, and upon their physicians to collaborate in such attempts. There is reason to believe that the over-all effects have been desirable. However, for a large number of overweight persons the resultant widespread mechanical prescription of reducing diets has had unfortunate consequences. For a smaller number it has been disastrous.

Fifty-one per cent of the obese women interviewed in a nutrition clinic reported untoward emotional responses to previous attempts at weight reduction. Such symptoms as "nervousness," "weakness," "irritability," "fatigue" and "general dissatisfaction" were prominent.

A more detailed investigation of 25 obese women in a psychosomatic clinic revealed that 9 had suffered emotional disturbances of psychotic intensity during past and present attempts at weight reduction. A common feature of these patients was a particularly intense relationship to one person who was seen as the source of all love and security. Interfrence with this relationship, particularly when this interference was voluntarily chosen by the patient, appeared to be a precipitating factor in many of these illnesses. Such a development often occurred during a period of elation ushered in by some apparently favorable change in the patient's living. It was in this setting that the ill-fated dietary attempts were undertaken. The elated period was terminated abruptly when some frustration forced the patient to recognize her vulnerability in her isolated situation. This led to a period of intense anxiety which was followed by a prolonged depressive spell. Recovery to the premorbid adjustment occurred in each case, and the illness apparently left no lasting ill-effects.

Discussion.—DR. HILDE BRUCH: It is a pleasure to discuss an excellent paper—but it leaves the discussant somewhat out on a limb. There is not much I can add, except to underline some of the main points.

By implication Dr. Stunkard stated that it is necessary to recognize that obesity is a far from uniform disorder and that different obese people show wide differences in their reaction to dieting. Conflicting opinions on the treatment of obesity are due to the failure to recognize these differences and to generalize instead from one particular case to all cases. Dr. Stunkard's group consists of women who were selected from the Nutrition Clinic because they were unable to cooperate in a diet program. The psychological significance of "poor cooperation" has been recognized before and there are many individual reports of successful psychiatric work with such patients. The shortcoming of this older work is the very fact that it deals with isolated cases usually carefully selected for their suitability for analysis. The merit of the present study is that it has been carried out on a sufficiently large number to illuminate certain common factors in a group of obese women who had in common this seemingly irrational behavior of complaining about being too fat but then refusing to do anything about it. It has been recognized by others that it is futile, even harmful, to enforce a reducing program under those circumstances.

CHLORPROMAZINE THERAPY IN PRIVATE PRACTICE. ITS BENEFITS AND COMPLICATIONS. DR. STANLEY LESSE, DR. SIDNEY MALITZ AND DR. PAUL H. HOCH.

This is a survey of 150 patients treated over a one and a half year period. Diagnostically there were 68 schizophrenics, 40 involutional melancholias, 33 psychoneurotics and 9 organic psychotics. One of every five showed marked improvement. If only those patients who demonstrated marked anxiety, prior to therapy, are included, about one in every three showed marked improvement. The degree of overt anxiety is the main factor determining the degree of improvement. The greater the initial anxiety, the better the expectations for improvement. The diagnostic entity does not seem to be a point of importance. In general, the briefer the illness, the better the results. The initial daily dosage varied from 50 to 400 mgm. The total daily dose was as high as 1500 mgm. Improvement usually was noted during the first weeks of treatment. Exacerbations, when they occurred, usually did so during the first three months.

Electroshock therapy was helpful in 34 of 58 patients in whom chlorpromazine had failed. Combined electroshock-chlorpromazine therapy was helpful in a few patients in whom each treatment alone had failed. About half of the patients had adverse effects from the drug. In 21 patients the drug was stopped because of the severity of the side reactions. The commonest complications were drowsiness, dryness of mouth and nose, pruritis, Parkinson-like patterns, grippe-like syndromes. Jaundice occurred in six cases. No agranulocytosis was seen.

Discussion.—DR. NATHAN S. KLINE: I am lost in admiration of Dr. Lesse, Dr. Malitz and Dr. Hoch for the expedition and thoroughness with which they have managed to test a very sizable group of patients in

private practice in a relatively short time. This constitutes a real contribution to the literature. Normally it would take a much greater length of time for a series of this size to accumulate in private practice.

There is one question which stands out in the whole presentation, namely, what would have happened to these patients if they had been treated with psychotherapy alone?

I disagree with the authors on only one point in the paper, and that is that the results here given could not have been predicted from hospital patients. It could not have been known with certainty a priori that private patients would respond as do the hospitalized ones, but on listening to this paper the results reported are almost identical to responses to both reserpine and chlorpromazine in institutional patients.

I think the most valuable contribution of the paper is the clear statement of the value of combined shock and chlorpromazine. It is a strong indication that shock is not to be discarded arbitrarily.

Dr. Stanley Lesse: I would like to thank Dr. Kline for his comments. I do not agree with him when he says that there is not too much difference in many instances between hospitalized patients and those seen in private practice. In general, there is a considerable difference between the type of patients we treated in our series and those reported from the State Hospitals.

Arteries of the Brain. An Anatomic Study. Dr. Harry A. Kaplan.

A concept of a uniform pattern of arteries throughout the brain has been derived from a six-year study of the blood vessels of slightly over 500 brains. Stereoroentgenograms of whole specimens and flat films of serial slices of fresh cadaver brains, in which the blood vessels were injected with a radiopaque material, made possible a study of the distribution, course and ramification of vessels in an undistorted relationship to surrounding structures. A constant relationship of the cerebral arteries to specific vesicles of the neural tube exists. The basic arterial pattern is essentially the same in design, consisting primarily of central perforating and lateral surface vessels arising from a main ventral trunk.

OBITUARIES

N. W. Winkelman, M.D.

(1892–1956)

Dr. Nathaniel W. Winkelman, Professor of Neuropathology at the University of Pennsylvania Medical School, Philadelphia, died February 13 at the age of 64 years.

Dr. Winkelman was internationally well known as a clinical neurologist and neuropathologist. He occupied several teaching posts of importance during his long career, was a consultant in great demand, and found the time and opportunity to accomplish and publish a large amount of fundamental research in his specialty. He was a member of numerous medical and other scientific organizations.

He was born in Philadelphia and was graduated in medicine from the University of Pennsylvania in 1914. He studied later in other medical centers in this country and Europe, but his life work was accomplished in the city of his birth. His passing is a serious loss to the profession which he graced so admirably.

Egas Moniz, M.D.

(1874–1955)

Dr. Egas Moniz, 1949 Nobel Prize winner in medicine for his development of prefrontal lobotomy in the treatment of mental disorders died in Lisbon, Portugal on December 13, 1955 at the age of 81 years. He was an active teacher, research worker and author for many years and became well known in 1927 for originating a method for visualizing the blood vessels of the brain now known as "cerebral angiography" which is used in localization procedures.

He performed first in 1935 the psychosurgical operation for which he gained world wide recognition and which has been applied with several variations to thousands of mental patients.

Walter Timme, M.D.

(1874–1956)

Dr. Walter Timme of Cold Spring, New York, a well known neurologist and endocrinologist who practiced and taught in New York City for many years, died in St. Petersburg, Florida on February 12. He was nearly 82 years of age.

Dr. Timme was a tireless worker in his field, writing many articles and monographs on the physiology, pathology and clinical experiences in endocrinology. He was the first to describe a pluriglandular syndrome which has become known as "Timme's Syndrome." He was graduated in medicine from Columbia University in 1897 and was long associated with the New York Neurological Institute and was the first Professor of Neuroendocrinology at the College of Physicians and Surgeons at Columbia. He was associated with the Vanderbilt Clinic from 1898 to 1916 being the Chief Neurologist from 1914–1916. From 1929 to 1937 he was Professor of Clinical Neurology at Columbia. He served as consultant in several hospitals in and about New York City.

Dr. Timme was an active organizer and supporter of the Association for Research in Nervous and Mental Diseases which has grown from a group of a few members to a large national body of workers. A devoted patron of the arts and music, Dr. Timme lived an interesting and useful life, and will be remembered with affection by all who knew him well.

BOOK REVIEWS

Cleckley, Hervey. THE MASK OF SANITY: AN ATTEMPT TO CLARIFY SOME ISSUES ABOUT THE SO-CALLED PSYCHOPATHIC PERSONALITY. [St. Louis: C. V. Mosby Co., 1955. Pp. 596. $9.50]

This is the third revised edition of a challenging presentation of the problem of the psychopathic personality which Cleckley aptly calls "la folie lucide" or "semantic disorder." The first edition of the book appeared in 1941. No other book on the subject contains a larger and more detailed collection of case studies. The masterful case presentations are precise and yet as readable as the best fiction. It would be hard to find less stilted and less pretentious writing on a scientific theme. Cleckley admirably illustrates the baffling problems of the psychopathic personality in all its complexities. The psychopath is like "a man, sane by the standards of psychiatry, aware of all the facts which we ourselves recognize, and free from delusions, who conducts himself in a way quite as absurd as many of the psychotic." Cleckley's hypothetical explanation of the main psychological defect of the psychopath is: "The psychopath's disorder or his difference from the whole or normal or integrated personality consists of an unawareness, and a persistent lack of ability to become aware, of what the most important experiences of life mean to others . . . Despite his otherwise perfect functioning, the major emotional accompaniments are absent or so attenuated as to count for little." Cleckley points out that the schizophrenic openly displays such an alteration and superficiality of affect, while in the psychopath they are masked by his misleading surface although they are evident in his conduct.

About two-thirds of the book consists of good case studies, some of which serve to differentiate the psychopathic personality from other mental disorders such as overt psychosis, ordinary criminal behavior, psychoneurosis, etc. There is also a discussion of traits most commonly found in the psychopath. One section is devoted to "an attempt at interpretation," and another deals with treatment and prognosis. The author pleads for a reevaluation of the psychiatric and legal treatment of the psychopath. The book's strongest point is its descriptions rather than its theory. It offers a comprehensive review of pertinent literature and a bibliography of 280 items. This excellent volume is indispensable to any student of the "lucid madness."

ZYGMUNT A. PIOTROWSKI

PROGRESS IN CLINICAL PSYCHOLOGY, Volume II. Edited by *Daniel Brower* and *Lawrence E. Abt.* [New York and London: Grune & Stratton, Inc., 1956. 360 pp.]

Whoever has somewhat systematically followed the development of clinical psychology has doubtless been struck by the perseverance and consistency characterizing its gradual emergence as a relatively independent discipline. The newer discipline is, indeed, no longer to be regarded as necessarily subordinate to orthodox psychiatry, but rather as being able effectually to co-operate with psychiatry in the handling of behaviour and personality problems.

This admirably planned and carefully executed volume is intended to bring us up to date on the progress that clinical psychology has made even since so recent a year as 1952, when Volume I was released by the same publishers. In clarity of approach and in conceptual orientation, the second volume impresses the reviewer as being more meritorious than the first. But no effort is made—and none rightly could be—either by the editors or by the contributors to conceal or gloss over the fact that clinical psychology, having now attained to a position of some rank and stature, still stands sorely in need of a more sharply crystallized theoretic structure. It is well enough for any clinician to be able to explain to himself how he has arrived at a particular set of conclusions regarding a patient, just as it is well enough for a worker in any branch of psychotherapy to possess a heightened intuition such as Stekel appears to have credited himself with; but all this fails to help very greatly in the establishing of a *tighter theoretic concept* of how clinical psychology *actually functions in practice.* Thus there is

still more than ample room for further inquiries and researches into numerous questions posed by the application of clinical psychology's methods and techniques to the treatment of psychogenic ills.

Again the editors have enjoyed the cooperation of some distinguished contributors, each of these writing on a subject of which he has both a theoretically sound and pragmatically tested knowledge. Thus, for instance, we find Piotrowski reporting on the Rorschach; Wyatt and Veroff on the TAT; Ekstein on psychoanalytic techniques; and Scheck on the use of hypnotic methods in clinical psychology. To appraise each contribution in any detail is neither the reviewer's purpose nor his desire; rather would he wish to advert to the healthy atmosphere that seems to pervade the volume *as a whole.* If only by implication, each contributor acknowledges that he makes no attempt to utter the final word on the subject he is dealing with, and that there is no place for categorical pronouncements in a field where the investigator is forever faced—not to say plagued—with subtle and highly individual problems centering around psyche and behaviour.

Clinical psychology entails the utilization of a considerable group of adjuvants, each of which gives almost the impression that it has contrived to resolve itself into a sort of subspecialty. Perhaps this is more or less as it ought to be—since who could be expected to be equally proficient in Rorschach, TAT, Szondi, and the other individual techniques constituting so large a part of the clinical psychologist's armamentarium? But whether clinical psychology, as a discipline of ever-increasing importance, is going to profit ultimately by such sub-specialization remains to be seen.

At any rate, there can be no doubt that PROGRESS IN CLINICAL PSYCHOLOGY, *Volume II*, is required reading for those who wish their knowledge of the subject to be brought as nearly up to the minute as possible.

NATHANIEL THORNTON

Phillipson, Herbert. THE OBJECT RELATIONS TECHNIQUE. [Glenco, Illinois: The Free Press; & London, Engl: Tavistock Publ. Lt.; 1956. Pp x + 224. Book plus Test Cards $10.00]

The author is a clinical psychologist at the Tavistock Clinic in London, England. His Object Relations Technique is a projective personality test, a version of Murray's Thematic Apperception Test. The most novel thing about it is the set of 12 new pictures and one blank card. The pictures differ greatly from Murray's TAT set and, in vagueness or number of recognizable details, resemble Symonds' set but some of them are far more vague and shadowy. The facial features of only one figure in one picture are faintly indicated. All other figures are outlined in solid grays (similar to that on Rorschach plate VII), in darker grays in some pictures, and in lighter grays in other pictures. Phillipson made a deliberate attempt to make his pictures resemble the Rorschach plates in stimulus value. No facial features (except profiles), clothes, or sex characteristics are shown. There is just a touch of red in several cards; otherwise they look gray and shadowy. The author is probably quite right in his claim that the new physical features of his pictures elicit more material, throwing more light on the subject's libidinous "unconscious object relation situation" (relationship with father and mother figures, and other basic interpersonal and psychosexual attitudes) than do pictures which are less ambiguous visually. This claim is in keeping with the fundamental percept-analytic principle that if the stimulus is vague and ambiguous but the response to it detailed and definite, all that is definite and specific is the subject's unwitting projection. Sometimes the projection is conscious, for some subjects realize that the TAT pictures (and their variants) cause them to have thoughts which describe their own life situation.

There is a very good chapter on the theoretical basis of the test. The ideas are not new and they are shared by those psychologists who, using projective personality tests, try to apply psychoanalytic principles to the interpretation of test data. The ideas, well and

systematically expressed by the author, are shared not only by the writers he quotes but by nearly every professional psychopathologist. Some of the categories into which Phillipson classifies the test data are: infantile dependent; infantile sexual aggressive; rivalry; denial of aggression; passive fear; intellectualization; renunciation; paranoid projection; avoidance of involvement; castration; sadistic destructive; etc. Conclusions of this kind can be verified (confirmed or invalidated) only by information obtained in intensive psychotherapy. It is probably for this reason that the author does not even discuss the matter of conclusions which could be checked by careful but direct observation of external social behavior. Like practically everybody else, Phillipson makes the silent assumption that the stories elicited by his (or other TAT) pictures reflect the subject's relationships with the most important persons in his life. When given the blank card, the subject must not only tell a story about a picture but he must first imagine a picture. In this respect the blank card differs radically from the picture cards. The psychological significance of the blank card stories also is unique: Phillipson found that they often reveal "a picture of the world he (the subject) would create for himself to gratify his needs while yet avoiding the threats and consequences he fears in reality", in other words, his wishful fantasies rather than his actual relations with others. This is a point which is usually overlooked.

The textbook contains one long and six shorter case studies with an orderly and consistent analysis of test data and comparison of test results with other information. This book performs its textbook function very well. It ends with rather extensive normative data collected from tests of 50 intellectually superior adults attending an outpatient clinic and from tests of 40 normal adolescent girls, aged 14 to 19. The Object Relations Technique and particularly its picture set will be of great interest to clinical psychologists.

ZYGMUNT A. PIOTROWSKI